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Volume 2

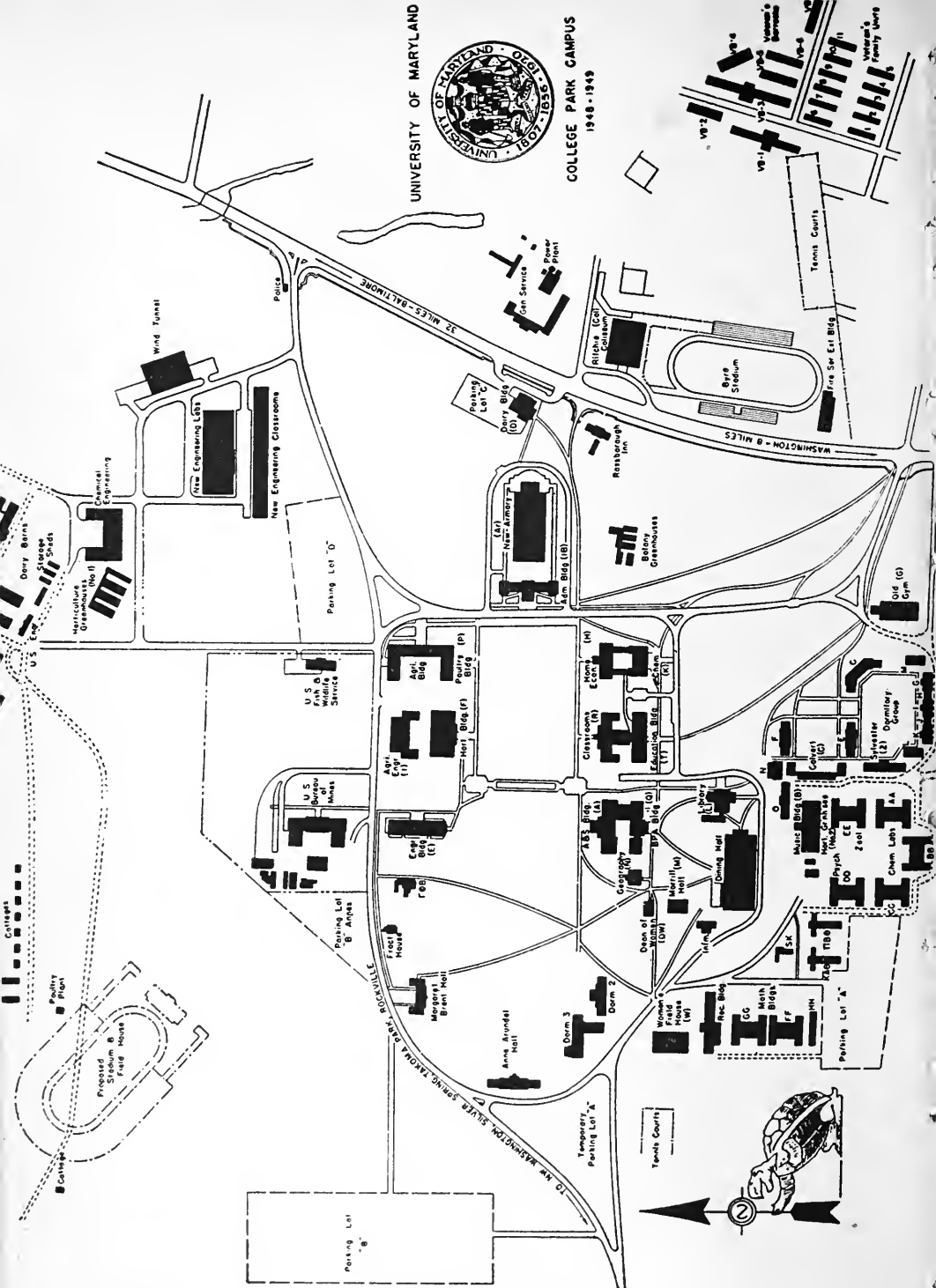
APRIL 1, 1949

Number 1

THE  
**GRADUATE  
SCHOOL**  
**I S S U E**  

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**ANNOUNCEMENTS**  
FOR THE SESSIONS OF  
1949 - 1950



## A UNIVERSITY OF MARYLAND PUBLICATION

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Edited by Harvey L. Miller, Director of Publications, University of Maryland.

# BOARD OF REGENTS

AND

## MARYLAND STATE BOARD OF AGRICULTURE

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Expires*

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The President of the University of Maryland is, by law, Executive Officer of the Board.

The State Law provides that the Board of Regents of the University of Maryland shall constitute the Maryland State Board of Agriculture.

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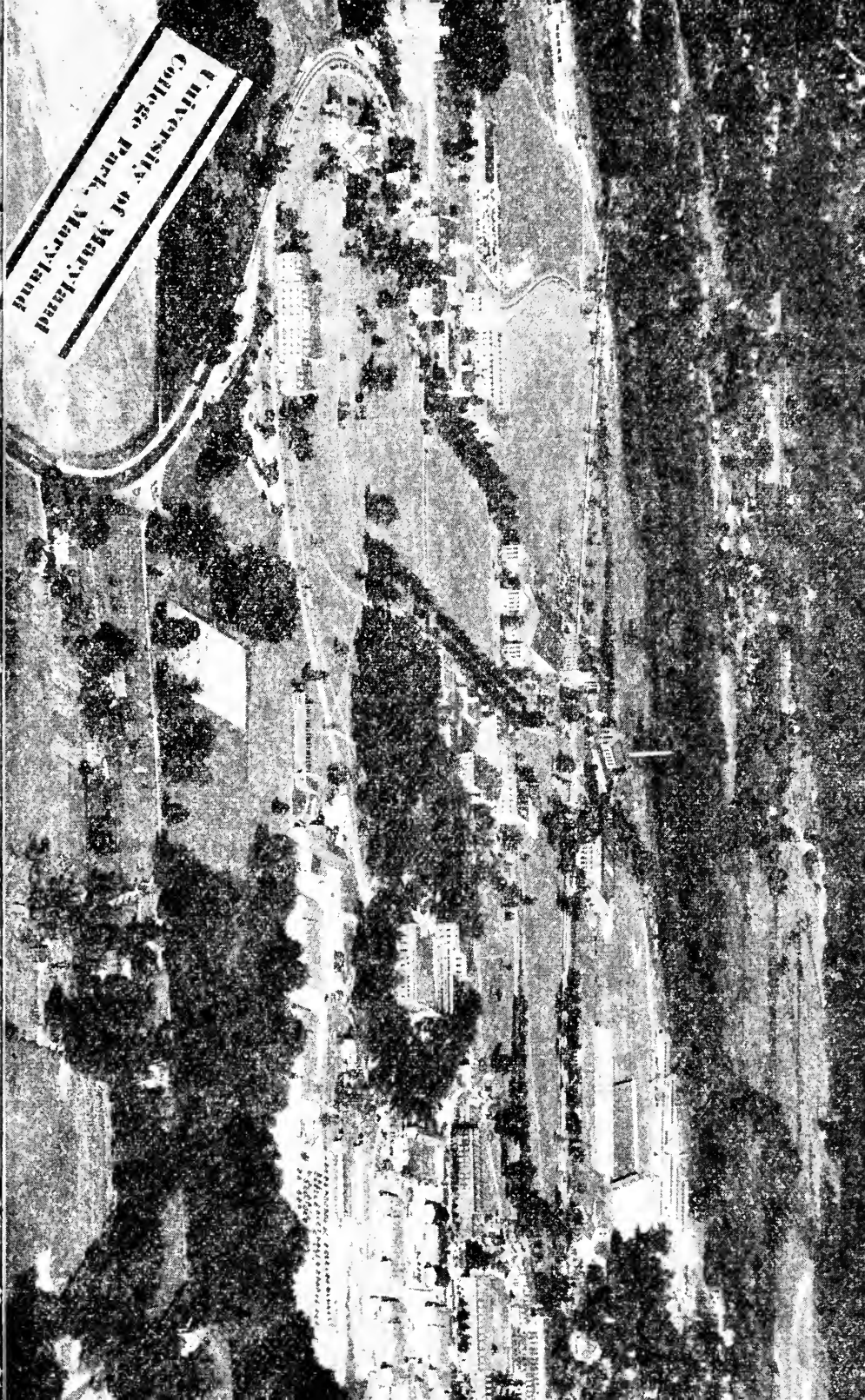
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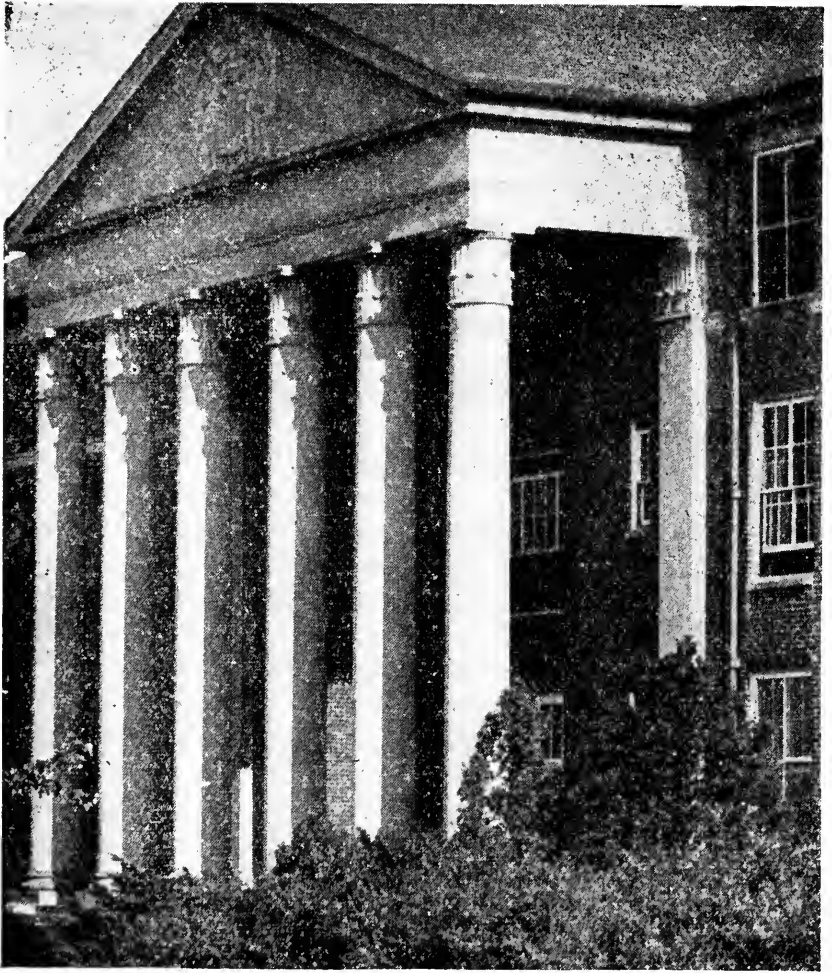
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FOR OTHER ADMINISTRATIVE OFFICERS,  
Faculty Committees and Library Staff, see back of book,  
pages V, VI, VII, VIII







Headquarters of the Graduate School  
University of Maryland  
College Park, Md.

## THE GRADUATE COUNCIL

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## GRADUATE FACULTY

C. O. APPLEMAN, Ph.D., *Dean*

The faculty of the Graduate School includes all members of the various faculties who give instruction in approved graduate courses. The general administrative functions of the graduate faculty are delegated to the Graduate Council.

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## GENERAL INFORMATION

### HISTORY AND ORGANIZATION

In the earlier years of the institution the Master's degree was frequently conferred, but the work of the graduate students was in charge of the departments concerned, under the supervision of the general faculty. The Graduate School of the University of Maryland was established in 1918, and organized graduate instruction leading to both the Master's and the Doctor's degree was undertaken. The faculty of the Graduate School includes all members of the various faculties who give instruction in approved graduate courses. The general administrative functions of the graduate faculty are delegated to a Graduate Council, of which the Dean of the Graduate School is chairman.

### LOCATION

The University of Maryland is located at College Park, in Prince George's County, Maryland, on the Baltimore and Ohio Railroad, eight miles from Washington and thirty-two miles from Baltimore. Washington, with its wealth of resources, is easily accessible by train, street car and bus.

The professional schools of Medicine, Nursing, Pharmacy, Dentistry and Law are located in Baltimore, at the corner of Lombard and Greene Streets.

### LIBRARIES

In addition to the resources of the University libraries the great libraries of the national capital are easily available for reference work. Because of the proximity of these libraries to College Park they are a valuable asset to research and graduate work at the University of Maryland.

## GENERAL REGULATIONS

### ADMISSION

An applicant for admission to the Graduate School must hold a bachelor's or a master's degree from a college or university of recognized standing. The applicant shall furnish an official transcript of his collegiate record which for unconditional admission must show creditable completion of an adequate amount of undergraduate preparation for graduate work in his chosen field. Application for admission to the Graduate School should be made prior to dates of registration on blanks obtained from the office of the Dean.

After approval of the application a matriculation card, signed by the Dean, is issued to the student. This card permits one to register in the Graduate School. After payment of the fee, the matriculation card is stamped and returned to the student. It is his certificate of membership in the Graduate School and should be retained by the student to present at each succeeding registration.

Admission to the Graduate School does not necessarily imply admission to candidacy for an advanced degree.

### REGISTRATION

All students pursuing graduate work in the University, even though they are not candidates for higher degrees, are required to register in the Graduate School at the beginning of each session. *In no case will graduate credit be given unless the student matriculates and registers in the Graduate School.* The program of work for each session is arranged by the student with the major department and entered upon two course cards, which are signed first by the professor in charge of the student's major subject and then by the Dean of the Graduate School. One card is retained by the Dean. The student takes the other card, and in case of a new student, also the matriculation card, to the Registrar's office, where the registration is completed. Students will not be admitted to graduate courses until the Registrar has certified to the instructor that registration has been completed. Course cards may be obtained at the Registrar's office or at the Dean's office. The heads of departments usually keep a supply of these cards in their respective offices.

### GRADUATE COURSES

Graduate students must elect for credit in partial fulfillment of the requirements for higher degrees only courses designated *For Graduates* or

*For Graduates and Advanced Graduates.* Students who are inadequately prepared for graduate work in their chosen fields or who lack prerequisites for minor courses may elect a limited number of courses numbered from 1 to 99 in the general catalogue, but graduate credit will not be allowed for these courses. Courses that are audited are registered for in the same way as other courses, and the fees are the same.

### PROGRAM OF WORK

The professor who is selected to direct a student's thesis work is the student's adviser in the formulation of a graduate program, including suitable minor work, which is arranged in cooperation with the instructors. To encourage thoroughness in scholarship through intensive application, graduate students in the regular sessions are limited to a program of fifteen credit hours per semester. If a student is preparing a theses during the minimum residence for the master's degree, the registration in graduate courses should not exceed twelve hours for the semester.

### SUMMER SESSION

The University conducts a six weeks' summer session at College Park, with a comprehensive undergraduate and graduate program. The University publishes a separate bulletin giving full information on this summer session. This bulletin is available upon application to the Director of the Summer Session, University of Maryland, College Park.

### GRADUATE WORK IN PROFESSIONAL SCHOOLS AT BALTIMORE

Graduate courses and opportunities for research are offered in the professional schools at Baltimore. Students pursuing graduate work in the professional schools must register in the Graduate School, and meet the same requirements and proceed in the same way, as do graduate students in other departments of the University. The graduate courses in the professional schools are listed on pages 84-91.

### GRADUATE WORK BY SENIORS IN THIS UNIVERSITY

A senior of this University who has nearly completed the requirements for the undergraduate degree may, with the approval of his undergraduate dean and the Dean of the Graduate School, register in the undergraduate college for graduate courses, which may later be transferred for graduate credit toward an advanced degree at this University, but the total of undergraduate and graduate courses must not exceed fifteen credits for the semester. Excess credits in the senior year cannot later be used for graduate credit unless such pre-arrangement is made. Seniors who wish to register for graduate credit should apply to the Dean of the Graduate School for information about procedure.

### ADMISSION TO CANDIDACY FOR ADVANCED DEGREES

Application for admission to candidacy for the Master's and for the Doctor's degree is made on application blanks which are obtained at the

office of the Dean of the Graduate School. These are filled out in duplicate by the student and submitted to his major department for further action and transmission to the Dean of the Graduate School. All applications for admission to candidacy must be approved by the Graduate Council.

Admission to candidacy in no case assures the student of a degree, but merely signifies he has met all the formal requirements and is considered by his instructors sufficiently prepared and able to pursue such graduate study and research as are demanded by the requirements of the degree sought. The candidate must show superior scholarship in graduate work already completed.

Application for admission to candidacy is made at the time stated in the sections dealing with the requirements for the degree sought.

### REQUIREMENTS FOR THE DEGREES OF MASTER OF ARTS AND MASTER OF SCIENCE

**Advancement to Candidacy.** Each prospective candidate for the Master's degree is required to make application for admission to candidacy not later than the date when instruction begins for the semester in which the degree is sought. He must have completed at least twelve semester hours of graduate work at the University of Maryland. An average grade of "B" in all major and minor subjects is required.

**Minimum Residence.** A residence of at least two semesters, or equivalent, at this institution, is required.

**Course Requirements.** A minimum of twenty-four semester hours, exclusive of thesis and registration for research, with an average grade of "B" in courses approved for graduate credit, is required for the degrees of Master of Arts and Master of Science. At the option of the major department concerned the student may be required also to register for a maximum of six semester hours for research and thesis work. The total number of credit hours required for the degree would then be thirty. If the student is inadequately prepared for the required graduate courses, either in the major or minor subjects, additional courses may be required to supplement the undergraduate work. Of the twenty-four hours required in graduate courses, not less than twelve hours and not more than sixteen semester hours must be earned in the major subject. The remaining credits must be outside the major subject and must comprise a group of coherent courses intended to supplement and support the major work. Not less than one-half of the total required course credits for the degree, or a minimum of twelve, must be selected from courses numbered 200 or above. No credit for the degree of Master of Arts or Master of Science may be obtained for correspondence courses. The entire course of study must constitute a unified program approved by the student's major adviser and by the Dean of the Graduate School.

**Transfer of Credit.** Credit not to exceed six semester hours, obtained at other recognized institutions, may be transferred and applied to the

course requirements of the Master's degree, provided that the work was of graduate character, and provided that it is approved for inclusion in the student's graduate program at the University of Maryland. This transfer of credit is submitted to the Graduate Council for approval when the student applies for admission to candidacy for the degree. Acceptance of the transferred credits does not reduce the minimum residence requirement. The candidate is subject to final examination by this institution in all work offered for the degree.

**Thesis.** In addition to the twenty-four semester hours in graduate courses a satisfactory thesis is required of all candidates for the degrees of Master of Arts and Master of Science. (Exceptions may be made in the cases of candidates for the degree of Master of Arts in American Civilization. See page 11.) The thesis must demonstrate the student's ability to do independent work and it must be acceptable in literary style and composition. With the approval of the student's major professor and the Dean of the Graduate School, the thesis in certain cases may be prepared *in absentia* under direction and supervision of a member of the faculty of this institution.

The original copy of the thesis must be deposited in the office of the Graduate School not later than two weeks before the convocation at which the degree is sought. The thesis should not be bound by the student, as the University later binds all theses uniformly. An abstract of the contents of the thesis, 200 to 500 words in length, must accompany it. A manual giving full directions for the physical make-up of the thesis is in the hands of each professor who directs thesis work, and should be consulted by the student before the typing of the manuscript is begun. Individual copies of this manual may be obtained by the student at the Dean's office, at nominal cost.

**Final Examination.** The final oral examination is conducted by a committee appointed by the Dean of the Graduate School. The student's adviser acts as the chairman of the committee. The other members of the committee are persons under whom the student has taken most of his major and minor courses. The chairman and the candidate are notified of the personnel of the examining committee at least one week prior to the period set for oral examinations. The chairman of the committee selects the exact time and place for the examination and notifies the other members of the committee and the candidate. The examination should be conducted within the dates specified by the Dean of the Graduate School at the end of the semester, but upon recommendation of the student's adviser, an examining committee may be appointed by the Dean of the Graduate School at any time when all other requirements for the degree have been completed. A report of the committee is sent to the Dean as soon as possible after the examination. A special form for this purpose is supplied to the chairman of the committee. Such report is the basis upon which recommendation is made to the faculty that the candidate be granted the degree sought. The

period for the oral examination is usually about one hour, but the time should be long enough to insure an adequate examination.

The examining committee also approves the thesis, and it is the candidate's obligation to see that each member of the committee has ample opportunity to examine a copy of the thesis prior to the date of the examination.

A student will not be admitted to final examination until all other requirements for the degree have been met. In addition to the oral examination a comprehensive written examination may be required at the option of the major department.

### REQUIREMENTS FOR THE DEGREE OF MASTER OF ARTS IN AMERICAN CIVILIZATION

Studies in American Civilization are intended to prepare the student for teaching, for further study, and for research in the general field of American Civilization, but with emphasis on one of two disciplines: history, including European backgrounds; or literature, including European literature, particularly English. All students will be expected to understand the development of American institutions and to demonstrate proficiency in the literary, social, economic, and political history of the United States.

With the approval of his adviser, a candidate for the Master of Arts degree with a major in American Civilization may elect in lieu of the thesis six additional hours of course work, to include at least two substantial seminar papers. The total number of credit hours required for the degree would then be thirty semester hours.

Each candidate must present credits for at least fifteen semester hours of work in American literature and American history, and credits for at least fifteen semester hours in supporting courses (nine hours if a thesis is elected). Supporting courses will normally be in such fields as European or Latin-American history, English literature, comparative literature, philosophy, art, education, sociology, economics, and politics and government.

Each candidate must demonstrate in a written examination that he possesses a reading knowledge of one foreign language.

All other requirements are the same as for the degrees of Master of Arts and Master of Science in other fields.

### REQUIREMENTS FOR THE DEGREE OF MASTER OF EDUCATION

Thirty semester hours of course work are required, which may include courses in departments other than Education not to exceed one-half of the total thirty hours, such courses to be selected in conformity with the student's special needs as agreed upon by the student and his adviser. Of the thirty hours, not less than one-half must be on the 200 level.

At least four of the thirty semester hours must be in seminar work in connection with which two seminar papers will be prepared in specially



prescribed form, approved in writing by the instructor in charge of the seminar and the Dean of the College of Education, and filed in the College of Education. One of these papers shall deal with a topic in the student's major field of concentration.

Included in the program must be courses in educational statistics and in procedure of educational research.

The requirements in regard to advancement to candidacy, transfer of credits, and final oral examination are the same as for the degrees of Master of Arts and Master of Science.

### REQUIREMENTS FOR THE DEGREE OF MASTER OF BUSINESS ADMINISTRATION

The degree of Master of Business Administration represents a minimum of two semesters of graduate work in addition to the satisfaction of all undergraduate requirements for the Bachelor's degree. Graduate work will normally include a minimum of twenty-four semester course hours and the completion of a satisfactory thesis. An average grade of "B" must be obtained in the twenty-four hours offered for graduate credit.

The undergraduate prerequisites for graduate work leading to the degree of Master of Business Administration may be satisfied by completion of work for the degree of Bachelor of Science in Business Administration at the University of Maryland, or by equivalent work leading to a corresponding degree at another accredited institution, providing this work is acceptable.

Candidates with Bachelor's degrees who have not taken the core group courses required for the degree of B.A. in Business Administration at this institution must do so in preparation for the degree of M.B.A. The list of core group courses includes principles of economics and accounting, the equivalent of six semester hours in business law, and introductory courses in labor economics, labor management, money and banking, financial management, marketing principles, marketing administration, and statistics (see Bulletin of College of Business and Public Administration for detailed list of core group courses).

Candidates for the M.B.A. degree may register in the Graduate School for any of these courses, but credit may not count as a part of the required twenty-four course hours in graduate work. Those who hold the Bachelor's degree in Business Administration may normally expect to complete the work for the M.B.A. in one year, while those who hold a B.A. or B.S. degree, other than in Business Administration, would normally require longer, but usually not to exceed two years.

### GRADUATE YEAR ABROAD

Realizing the value for American students of study abroad, the University of Maryland has set up Foreign Study Centers to coordinate and direct work of graduate students in Paris, France, and Zurich, Switzerland.

Furthermore, the University has established the degree of Master of Foreign Study which will serve to give an American evaluation of work done abroad by the graduate students. The student attends courses at the University of Paris or at the University of Zurich and returns to the University of Maryland to submit his thesis and take an examination.

Since the system in European universities is quite different from that in American institutions, the registrants for Foreign Study participate in an orientation period in Paris or Zurich which serves to improve their knowledge of the language and to familiarize them with European customs and institutions.

Two kinds of awards are offered: the *Certificate*, for the successful completion of an approved program of thirty semester hours; and the Master of Foreign Study degree. The requirements for this degree are the same as those for a Master of Arts—twenty-four semester hours divided between a major and a minor and completion of a thesis.

The Foreign Study Office is directed locally by Dr. A. E. Zucker, chairman, Division of Humanities, while Dr. Edmund E. Miller is resident director abroad with his offices in Zurich. For the year 1948-49 Dr. William R. Quynn and Professor F. C. A. Koelln are acting as resident deans in Paris and Zurich, respectively, and Dr. Dorothy M. Quynn is serving as non-resident professor of history in Paris. All communications concerning this program should be directed to the Foreign Study Office, University of Maryland, College Park, Maryland.

## REQUIREMENTS FOR THE DEGREE OF DOCTOR OF EDUCATION

The Doctor of Education degree is offered for students who expect to hold teaching or administrative positions in education and who desire to develop exceptional competence in special areas. The ability to explore and solve practical educational problems is emphasized. The requirements are the same as for the degree of Doctor of Philosophy except as specified below.

**Foreign Languages.** The requirement of foreign languages may be waived for candidates for this degree when the program of study and research does not involve the use of foreign languages.

**Major and Minor Subjects.** The candidate must select one major area in which he expects to develop exceptional competence. The amount of required course work in the major subject will vary with the individual candidate.

In addition to the major, the candidate must select approximately five other areas in which he intends to develop a high degree of competence. One or two of these areas may be designated as minor fields.

The candidate must register for a minimum of six hours of research.

**Project.** Instead of completing a thesis as required for a candidate for the degree of Doctor of Philosophy a candidate for this degree must dem-

onstrate exceptional competence to work through field problems by completing a project in the major area. A Committee on Doctoral Research is appointed for each candidate. The committee is composed of three members, at least two of whom are from the faculty of the College of Education. The committee passes upon the student's plans for research, determines the amount of course credit to be allowed for the doctoral study. The specialist in the student's major area serves as sponsor and provides detailed guidance for the project.

The regulations governing submission and form of copies of the project are the same as for the Ph. D. thesis.

**Comprehensive Examination.** A comprehensive examination must be passed before the candidate may take the final oral examination. The comprehensive examination may be oral or written, or both; it will cover the general field of major and minor study.

**Final Oral Examination.** The final examination covers the project and its relationship to the general field in which it lies and the candidate's attainments in related areas.

## REQUIREMENTS FOR THE DEGREE OF DOCTOR OF PHILOSOPHY

**Advancement to Candidacy.** Candidates for the Doctor's degree must be admitted to candidacy at least one academic year before the final examination. Applications for admission to candidacy for the Doctor's degree are made in duplicate by the student and submitted to his major department for further action and transmission to the Dean of the Graduate School. Blanks may be obtained at the office of the Graduate School.

The applicant must have demonstrated to the head of the Foreign Language Department that he possesses a reading knowledge of French and German. With the approval of the major department and the Graduate Council, in special cases another Foreign language may be substituted for either French or German. Preliminary examinations or such other substantial tests as the departments may elect are also required for admission to candidacy.

**Residence.** The equivalent of three years of full-time graduate study and research is the minimum required. Of the three years the equivalent of at least one year must be spent in residence at the University. On a part-time basis the time needed will be correspondingly increased. All work at other institutions offered in partial fulfillment of the requirements for the Ph.D. degree is submitted to the Graduate Council for approval, upon recommendation of the department concerned, when the student applies for admission to candidacy for the degree.

The Doctor's degree is not given merely as a certificate of residence and work, but is granted only upon sufficient evidence of high attainments in scholarship, and ability to carry on independent research in the special field in which the major work is done.

**Major and Minor Subjects.** The candidate must select a major and one or two closely related minor subjects. At least twenty-four semester hours, exclusive of research, are required in minor work. The remainder of the required residence is devoted to intensive study and research in the major field. The amount of required course work in the major subject will vary with the department and the individual candidate. The candidate must register for a minimum of twelve semester hours of research.

**Thesis.** The ability to do independent research must be shown by a dissertation on some topic connected with the major subject. An original type-written copy and two clear, plain carbon copies of the thesis, together with an abstract of the contents, 250 to 500 words in length, must be deposited in the office of the Dean at least three weeks before the convocation at which the degree is sought. It is the responsibility of the student also to provide copies of the thesis for the use of the members of the examining committee prior to the date of the final examination.

The original copy should not be bound by the student, as the University later binds uniformly all theses for the general University library. The carbon copies are bound by the student in cardboard covers which may be obtained at the Student's Supply Store. The abstracts are published biennially by the University in a special bulletin.

A manual giving full directions for the physical make-up of the thesis is in the hands of each professor who directs thesis work, and should be consulted by the student before typing of the thesis is begun. Students may obtain copies of this manual at the Dean's office, at nominal cost.

**Final Examination.** The final oral examination is held before a committee appointed by the Dean. One member of this committee is a representative of the graduate faculty who is not directly concerned with the student's graduate work. One or more members of the committee may be persons from other institutions who are distinguished scholars in the student's major field.

The duration of the examination is approximately three hours, and covers the research work of the candidate as embodied in his thesis, and his attainments in the fields of his major and minor subjects. The other detailed procedures are the same as those stated for the Master's examination.

## **RULES GOVERNING LANGUAGE EXAMINATIONS FOR CANDIDATES FOR THE DEGREE OF DOCTOR OF PHILOSOPHY**

1. A candidate for the Doctor's degree must show in a written examination that he possesses a reading knowledge of French and German. With the approval of the major department and the Graduate Council, in special cases another foreign language may be substituted for either French or German. The passages to be translated will be taken from books and articles in his specialized field. Some 300 pages of text from which the applicant wishes to have his examination chosen should be submitted to the head of the Department of Foreign Languages at least three days

before the examination. The examination aims to test ability to use the foreign language for research purposes. It is presumed that the candidate will know sufficient grammar to distinguish inflectional forms and that he will be able to translate readily in two hours about 500 words of text, with the aid of a dictionary.

2. Application for admission to these tests must be filed in the office of the Department of Foreign Languages at least three days in advance of the tests.

3. No penalty is attached to failure in the examination, and an unsuccessful candidate is free to try again at the next date set for these tests.

4. Examinations are held near the office of the Department of Foreign Languages, on the first Wednesday of October, February and June, at 2 p.m.

### GRADUATE FEES

The fees paid by graduate students are as follows:

A matriculation fee of \$10.00. This is paid once only, upon admission to the Graduate School.

A diploma fee (Master's degree), \$10.00.

A graduate fee, including hood (Doctor's degree), \$25.00.

### College Park:

A fixed charge, each semester, of \$8.00 per semester credit hour for students carrying eight hours or less; for students carrying more than eight hours, \$65.00 for the semester.

Laboratory fees, where charged, range from \$1.00 to \$10.00 per course per semester.

### Living Expenses and Self Help:

Board and lodging are available in many private homes in College Park and vicinity. The cost of board and room changes from about \$50.00 to \$55.00 a month, depending on the desires of the individual. A list of accommodations is maintained in the offices of the Dean of Women and the Dean of Men.

Application for student employment, aside from fellowships and assistantships, may be made through the offices of the Dean of Men and the Dean of Women, or to department heads.

### FELLOWSHIPS AND ASSISTANTSHIPS

**Fellowships.** A number of fellowships have been established by the University. The stipend for the University fellows is \$600 for nine months and the remission of all graduate fees except the diploma fee. Several industrial and special fellowships, with varying stipends, are also available in certain departments.

Fellows are required to render minor services prescribed by their major departments. The usual amount of service required does not exceed twelve clock hours per week. Fellows are permitted to carry a full graduate program, and they may satisfy the residence requirement for higher degrees in the normal time.

Applications for fellowships are made on blanks which may be obtained from the office of the Graduate School. The application, with the necessary credentials, is sent by the applicant directly to the Dean of the Graduate School. Applications which are approved by the Dean are forwarded to the departments, where final selection of the fellows is made. The awards of University fellowships are on a competitive basis.

**Graduate Assistantships.** A number of teaching and research assistantships are available in several departments. The compensation is \$100 per month unless otherwise specified and varies with the nature and amount of service required and with the terms of appointment. The amount of credit allowed toward a degree likewise varies with the amount of time available for graduate study. The research assistants, especially those in the Experiment Station, usually participate in research that meets the requirements for a Master's or a Doctor's degree.

Applications for graduate assistantships are made directly to the departments concerned and appointments are made through the regular channels for staff appointments. Further information regarding these assistantships may be obtained from the department or college concerned.

## COMMENCEMENT

Attendance is required at the commencement at which the degree is conferred.

Application for diploma must be filed in the office of the Registrar eight weeks before the convocation at which the candidate expects to obtain a degree.

Academic costume is required of all candidates at commencement. Those who so desire may purchase or rent caps and gowns at the Student's Supply Store. Order must be filed eight weeks before the date of convocation but may be cancelled later if the student finds himself unable to complete his work for the degree.

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A time schedule, supplementing this catalog, is issued shortly before the beginning of each semester, showing the hours and location of class meetings. This schedule is available at the office of the Graduate School, or the office of the Registrar.

The provisions of this bulletin are not to be regarded as an irrevocable contract between the student and the University. The University reserves the right to change any provision or requirement at any time within the student's term of residence.

## DESCRIPTION OF COURSES

For the convenience of students in making out schedules of studies, the subjects in the following Description of Courses are arranged alphabetically:

Agricultural Economics.....	16
Agricultural Education and Rural Life.....	18
Agronomy .....	19
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Botany .....	21, 89
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Comparative Literature .....	34
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Education .....	37
Engineering .....	45
English Language and Literature.....	53
Entomology .....	55
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Geography .....	27
Government and Politics.....	29
History .....	59
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Physiology .....	88
Poultry Husbandry .....	76
Psychology .....	76
Sociology .....	79
Speech .....	81
Veterinary Science .....	83
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## METHOD OF NUMBERING COURSES AND COUNTING CREDIT HOURS

Courses for Advanced Undergraduates and Graduates are numbered 100 to 199; courses for Graduates only are numbered 200 and upward.

A course with a single number extends through one semester.

A course with a double number extends through two semesters.

The number of semester hour credits is shown by the arabic numerals in parentheses after the title of the course. Examples:

**Course 101. Title (3).** First semester.

If a laboratory course:

**Course 101. Title (3).** One lecture and two laboratory periods a week, first semester.

(This is a semester course: offered once a year.)

**Course 101. Title (3).** First and second semesters.

(This is a semester course, repeated each semester, and except for research, seminar, and certain problem courses, must be taken only one semester.)

**Course 103, 104. Title (3, 3).** Three hours a week, first and second semesters.

If a laboratory course:

**Course 103, 104. Title (3, 3).** One lecture and two laboratory periods a week, first and second semesters.

(This is a course extending through two semesters and carrying three semester credits each semester.)

**Course 103, 104. Title (3, 3).** Three hours a week, second and first semesters.

(This is a course extending through two semesters, but it begins with the second semester.)

**Course 105, f, s. Title (3, 3).** Three hours a week, first and second semesters.

(This is alternate way of listing a two-semester course.)

## AGRICULTURAL ECONOMICS AND MARKETING

### FOR GRADUATES AND ADVANCED UNDERGRADUATES

**A. E. 100. Farm Economics (3).** First semester. Prerequisites, Econ. 31, 32, or Econ. 37. Shull.

**A. E. 101. Marketing of Farm Products (3).** Second semester. Prerequisites, Econ. 31, 32, or Econ. 37. Shull.



- A. E. 103. Cooperation in Agriculture (3). First semester. Poffenberger.
- A. E. 104. Farm Finance (3). Second semester. Poffenberger.
- A. E. 105. Food Products Inspection (2). One lecture and one laboratory period a week, second semester. Staff.
- A. E. 106. Prices of Farm Products (3). Second semester. Poffenberger.
- A. E. 107. Analysis of the Farm Business (3). One lecture and two laboratory periods a week, first semester. Hamilton.
- A. E. 108. Farm Management (3). Second semester. Hamilton.
- A. E. 109. Research Problems (1-2). First and second semesters. DeVault.
- A. E. 110. Seminar (1, 1). First and second semesters. Hamilton.
- A. E. 111. Land Economics (3). First semester. ———.
- A. E. 114. Foreign Trade in Farm Products (3). Second semester. Shull.
- A. E. 115. Marketing of Dairy Products (3). First semester. Beal.
- A. E. 116. Marketing of Fruits and Vegetables (3). Second semester. Hoecker.

Poultry Marketing Problems. See Poultry Husbandry, P. H. 104.

Egg Marketing Problems. See Poultry Husbandry, P. H. 105.

Poultry Industrial and Economic Problems. See Poultry Husbandry, P. H. 107.

Market Milk. See Dairy Husbandry, D. H. 113.

Livestock Markets and Marketing. See Animal Husbandry, A. H. 150.

Meat and Livestock Products. See Animal Husbandry, A. H. 160.

Economics of Consumption. See Economics, Econ. 130.

Economics of Cooperatives. See Economics, Econ. 151.

Advertising Programs and Campaigns. See Business Administration, B. A. 151.

Retail Store Management. See Business Administration, B. A. 154.

#### FOR GRADUATES

- A. E. 200, 201. Special Problems in Farm Economics (2, 2). First and second semesters. DeVault.
- A. E. 202. Seminar (1). First and second semesters.. DeVault.
- A. E. 203. Research. Credit according to work accomplished. Staff.
- A. E. 208. Agricultural Policy (3). Second semester. Beal.

- A. E. 210. Taxation in Relation to Agriculture (2). Second semester. Walker.
- A. E. 211. Agricultural Taxation in Theory and Practice (3). Two lectures and one laboratory period a week, first semester. Walker.
- A. E. 212, 213. Land Utilization and Agricultural Production (3, 3). Three hours a week, first and second semesters. Baker.
- A. E. 214. Consumption of Farm Products and Levels of Living (3). Second semester. Baker.
- A. E. 215. Advanced Agricultural Cooperation (3). First semester. Poffenberger.
- A. E. 216. Advanced Farm Management (3). Second semester. ———.
- A. E. 217. Agricultural Economics Research Techniques (2). First and second semesters. Hoecker.

### AGRICULTURAL EDUCATION AND RURAL LIFE

#### FOR GRADUATES AND ADVANCED UNDERGRADUATES

- R. Ed. 107. Observation and Analysis of Teaching for Agricultural Students (3). Two lectures and one laboratory period a week, second semester. Ahalt.
- R. Ed. 109. Teaching Secondary Vocational Agriculture (3). First semester. Ahalt.
- R. Ed. 111.. Teaching Young and Adult Farmer Groups (1). First semester. Ahalt.
- R. Ed. 112. Departmental Management (1). One laboratory period a week, second semester. Prerequisites, R. Ed. 107, 109. Ahalt.
- R. Ed. 114. Rural Life and Education (3). Second semester. Ahalt.

#### FOR GRADUATES

- R. Ed. 201, 202. Rural Life and Education (3, 3). Three hours a week, first and second semesters. Prerequisite, R. Ed. 114, or equivalent. Ahalt.
- R. Ed. 207, 208. Problems in Vocational Agriculture (2, 2). Two hours a week, first and second semesters. Ahalt.
- R. Ed. 220. Field Problems in Rural Education (1-3). First and second semesters. Prerequisite, six semester hours of graduate study.
- R. Ed. 250. Seminar in Rural Education (1-2). First and second semesters. Ahalt.
- R. Ed. 251. Research. Credit according to work done. Ahalt.

## AGRONOMY

## A. Crops

## FOR GRADUATES AND ADVANCED UNDERGRADUATES

- Agron. 103. Crop Breeding (2). First semester. Prerequisite, Zool. 104.  
Ronningen.
- Agron. 151. Cropping Systems (2). Second semester. Kuhn.
- Agron. 152. Seed Production and Distribution (2). Second semester.  
Liden.
- Agron. 153. Selected Crop Studies (2-4). First and second semesters.  
Staff.

## FOR GRADUATES

- Agron. 201. Crop Breeding (2-4). Two hours a week in addition to conference and assignments, second semester. Prerequisite, consent of instructor.  
Ronningen.
- Agron. 203. Seminar (1). First and second semesters. Staff.
- Agron. 204. Technique in Field Crop Research (2). First semester.  
Kuhn.
- Agron. 209. Research (4-8). Arranged. Staff.

## B. Soils

## FOR GRADUATES AND ADVANCED UNDERGRADUATES

- Soils 103. Soil Geography (3). Two lectures and one laboratory period a week, second semester. Prerequisites, Soils 1 and Geology.  
Thomas and Gross.
- Soils 112. Soil Conservation (3). Two lectures and one discussion period a week, first semester. Prerequisite, Soils 1. Thomas.
- Soils 120. Soil Management (3). Two lectures and one laboratory period a week, second semester. Prerequisites, Soils 1 and 2.  
Thomas and Gross.

## FOR GRADUATES

- Soils 201. Special Problems and Research (10-12). Arranged. Thomas.
- Soils 202, 203. Soil Science (3, 3). Three hours a week, first and second semesters. Prerequisites, Soils 1 and 2, or equivalent.  
Thomas and Axley.
- Soils 212, 213. Soil Research Technique (2, 2). Two three-hour laboratory periods a week, first and second semesters. Thomas and Axley.

## ANIMAL HUSBANDRY

## FOR GRADUATES AND ADVANCED UNDERGRADUATES

- A. H. 111. Animal Nutrition (3). First semester. Prerequisites, Chem. 31, 32, 33, 34; A. H. 110.

- A. H. 150. **Livestock Markets and Marketing (2).** First semester. Prerequisite, A. H. 1.

#### FOR GRADUATES

- A. H. 120. **Principles of Breeding (3).** Second semester. Two lectures and one laboratory period a week. Prerequisite, Zool. 104. Graduate credit with permission of instructor.
- A. H. 201. **Special Problems in Animal Husbandry (2-4).** Credit in proportion to work accomplished. First or second semester. Staff.
- A. H. 202, 203. **Seminar (1, 1).** First and second semesters. Staff.
- A. H. 204. **Research.** Credit in proportion to work accomplished. Staff.
- A. H. 205. **Advanced Breeding (2).** Second semester. Prerequisite, Zool. 104; A. H. 120; one course in biological statistics.
- A. H. 206, 207. **Advanced Livestock Management (3, 3).** Two lectures and one laboratory period a week. First and second semesters.

#### BACTERIOLOGY

##### FOR GRADUATES AND ADVANCED UNDERGRADUATES

Laboratory fees in Bacteriology are \$10.00 per course per semester.

- Bact. 101. **Pathogenic Bacteriology (4).** Two lecture and two laboratory periods a week, first semester. Prerequisite, Bact. 5. Faber.
- Bact. 103. **Serology (4).** Two lecture and two laboratory periods a week, second semester. Prerequisite, Bact. 101. Faber.
- Bact. 104. **History of Bacteriology (1).** One lecture period a week, first semester. Prerequisite, a major or minor in bacteriology. Doetsch.
- Bact. 105. **Clinical Methods (4).** Two lecture and two laboratory periods a week, first semester. Prerequisite, Bact. 103. Faber.
- Bact. 108. **Epidemiology and Public Health (3).** Three lecture periods a week, second semester. Prerequisite, Bact. 101. Faber.
- Bact. 131. **Food Bacteriology (4).** Two lecture and two laboratory periods a week, first semester. Prerequisite, Bact. 5. Laffer.
- Bact. 133. **Dairy Bacteriology (4).** Two lecture and two laboratory periods a week, first semester. Prerequisite, Bact. 5. Doetsch.
- Bact. 135. **Soil Bacteriology (4).** Two lecture and two laboratory periods a week, second semester. Prerequisite, Bact. 5. Hansen.
- Bact. 161. **Systematic Bacteriology (4).** Two lecture and two laboratory periods a week, first semester. Prerequisite, 16 credits in bacteriology. Hansen.
- Bact. 181. **Bacteriological Problems (3).** First and second semesters. Prerequisite, 16 credits in bacteriology. Registration only upon the consent of the instructor. Staff.

## FOR GRADUATES

- Bact. 201. Advanced Pathogenic Bacteriology (4).** Two lecture and two laboratory periods a week, first semester. Prerequisite, 30 credits in bacteriology and allied fields, including Bact. 103. Laffer.
- Bact. 204. Bacterial Metabolism (2).** Two lecture periods a week, first semester. Prerequisite, 30 credits in bacteriology and allied fields, including Chem. 161 and 162. Pelczar.
- Bact. 206, 208. Special Topics (1, 1).** One lecture period a week, first and second semesters. Prerequisite, 20 credits in bacteriology. Staff.
- Bact. 231. Advanced Food Bacteriology (4).** Two lecture and two laboratory periods a week, first semester. Prerequisite, 30 credits in bacteriology, including Bact. 131. Laffer.
- Bact. 280. Seminar (1).** First and second semesters. Prerequisite, 30 credits in bacteriology. Staff.
- Bact. 291. Research.** First and second semesters. Prerequisite, 30 credits in bacteriology. Staff.

## BOTANY

## A. Plant Physiology

## FOR GRADUATES AND ADVANCED UNDERGRADUATES

- Bot. 101. Plant Physiology (4).** Two lectures and two laboratory periods a week, first semester. Prerequisites, Bot. 1, and general chemistry. Laboratory fee, \$5.00. Gauch.
- Bot. 102. Plant Ecology (3).** Two lectures and one laboratory period a week, second semester. Prerequisite, Bot. 11, or equivalent. Brown.

## FOR GRADUATES

- Bot. 201. Plant Biochemistry (2 or 4).** First semester. Prerequisites, Bot. 101, and elementary organic chemistry, or equivalent. (Laboratory only [2 credits] given 1949-1950.) Lectures prerequisite. Laboratory fee, \$5.00. Gauch.
- Bot. 202. Plant Biophysics (2).** First semester. Prerequisites, Bot. 101, and elementary physics, or equivalent. Gauch.
- Bot. 203. Biophysical Methods (2).** First semester. To accompany Bot. 202. Same prerequisites. Laboratory fee, \$5.00.
- Bot. 204. Growth and Development (2).** Second semester. Prerequisite, 12 semester hours of plant science.
- Bot. 205. Salt Nutrition Seminar (1).** Second semester. (Not given 1949-1950.) Gauch.
- Bot. 206. Research in Plant Physiology.** Credit according to work done. Gauch.

**B. General Botany and Morphology**

## FOR GRADUATES AND ADVANCED UNDERGRADUATES

- Bot. 111. Plant Anatomy (3).** One lecture and two laboratory periods a week, first semester. Prerequisite, Bot. 110, or equivalent. Laboratory fee, \$5.00. Rappleye.
- Bot. 113. Plant Geography (2).** First semester. Prerequisite, Bot. 1, or equivalent. Brown.
- Bot. 114. Advanced Plant Taxonomy (3).** One lecture and two laboratory periods a week, first semester. Prerequisite, Bot. 11, or equivalent. Laboratory fee, \$5.00. Brown.
- Bot. 115. Structure of Economic Plants (2).** Two laboratory periods a week, second semester. Prerequisite, Bot. 111. Laboratory fee, \$5.00. Rappleye.
- Bot. 116. History and Philosophy of Botany (1).** First semester. Prerequisite, 15 semester hours of botany. Bamford.
- Bot. 117. Plant Breeding (2).** Second semester. Prerequisites, Zool. 104, or equivalent. Morgan.

## FOR GRADUATES

- Bot. 211. Cytology (4).** Two lectures and two laboratory periods a week, second semester. Prerequisites, Bot. 110, Zool. 104. Laboratory fee, \$5.00. Bamford, Morgan.
- Bot. 212. Plant Morphology (2).** Two laboratory periods a week, first semester. Prerequisites, Bot. 11, Bot. 111, or equivalent. Laboratory fee, \$5.00. Rappleye.
- Bot. 213. Seminar (1).** First and second semesters. Prerequisite, permission of instructor. Bamford.
- Bot. 214. Research.** Credit according to work done. Bamford, Morgan.
- Bot. 215. Plant Cytogenetics (3).** First semester. Prerequisites, Zool. 104, Bot. 211. Laboratory fee, \$5.00. Morgan.

**C. Plant Pathology**

## FOR GRADUATES AND ADVANCED UNDERGRADUATES

- Bot. 122. Research Methods in Plant Pathology (2).** Two laboratory periods a week, first and second semesters. Prerequisite, Bot. 20, or equivalent. Laboratory fee, \$5.00. Cox.
- Bot. 123. Diseases of Ornamental Plants (2).** Second semester. Prerequisite, Bot. 20, or equivalent. Jeffers.
- Bot. 124. Diseases of Tobacco and Agronomic Crops (2).** (Not offered 1949-1950.) Prerequisite, Bot. 20, or equivalent.

- Bot. 125. Diseases of Fruit Crops (2).** First semester. Prerequisite, Bot. 20, or equivalent. Weaver.
- Bot. 126. Diseases of Vegetable Crops (2).** (Not offered 1949-1950.) Prerequisite, Bot. 20, or equivalent. Cox.
- Bot. 128. Mycology (4).** Two lectures and two laboratory periods a week, first semester. Prerequisite, Bot. 2, or equivalent. Laboratory fee, \$5.00. Jeffers.

## FOR GRADUATES

- Bot. 221. Virus Diseases (3).** Two lectures and one laboratory period a week, second semester. Prerequisites, Bot. 20, Bot. 101. Laboratory fee, \$5.00. Brierley.
- Bot. 222. Plant Nematology (2).** Second semester. Two lectures. Prerequisite, Bot. 20, or equivalent. Steiner.
- Bot. 225. Research, Pathology.** Credit according to work done. Staff.
- Bot. 226. Plant Disease Control (3).** First semester. Prerequisite, Bot. 20, or equivalent. Cox.
- Bot. 229. Seminar, Pathology (1).** First and second semester. Jeffers.

## BUSINESS AND PUBLIC ADMINISTRATION

## A. Business Administration

## FOR GRADUATES AND ADVANCED UNDERGRADUATES

- B. A. 110, 111. Intermediate Accounting (3, 3).** First and second semesters. Prerequisite, a grade of B or better in B. A. 21, or consent of instructor.
- B. A. 116. Public Budgeting (3).** Prerequisites, B. A. 21 and Econ. 32.
- B. A. 118. Governmental Accounting (3).** Prerequisite, B. A. 111.
- B. A. 121. Cost Accounting (4).** Second semester. Prerequisite, a grade of B or better in B. A. 21, or consent of instructor.
- R. A. 122. Auditing Theory and Practice (3).** First semester. Prerequisite, B. A. 111.
- B. A. 123. Income Tax Accounting (4).** First semester. Prerequisite, a grade of B or better in B. A. 21, or consent of instructor.
- B. A. 124, 126. Advanced Accounting (3, 3).** First and second semesters. Prerequisite, B. A. 111.
- B. A. 125. C. P. A. Problems (3).** Second semester. Prerequisite, B. A. 124, or consent of instructor.
- B. A. 127. Advanced Auditing Theory and Practice (3).** Second semester. Prerequisite, B. A. 122.

- B. A. 129. Apprenticeship in Accounting (0).
- B. A. 130. Elements of Business Statistics (3). First semester.
- B. A. 131. Statistics Laboratory.
- B. A. 132, 133. Advanced Business Statistics (3, 3). Three hours a week, first and second semesters. Prerequisite, B. A. 130.
- B. A. 140. Financial Management (3). Second semester. Prerequisite, Econ. 140.
- B. A. 141. Investment Management (3). First semester. Prerequisite, B. A. 140.
- B. A. 142. Banking Policies and Practices (3). Second semester. Prerequisite, Econ. 140.
- B. A. 143. Credit Management (3). Second semester. Prerequisite, B. A. 140.
- B. A. 144. Life, Group and Social Insurance (2). First semester. Prerequisite, Econ. 32 or 37.
- B. A. 145. Property, Casualty, and Liability Insurance (2). First semester. Prerequisite, Econ. 32 or 37.
- B. A. 146. Real Estate Financing and Appraisals (2). Second semester. Prerequisites, Econ. 32 or 37, B. A. 156.
- B. A. 147. Business Cycles (3). Second semester. Prerequisite, Econ. 140.
- B. A. 150. Marketing Management (3). Second semester. Prerequisite, Econ. 150.
- B. A. 151. Advertising Programs and Campaigns (2). First semester. Prerequisite, B. A. 150.
- B. A. 152. Advertising Copy Writing and Layout (2). Second semester. Prerequisite, B. A. 151.
- B. A. 153. Purchasing Management (3). First semester. Prerequisite, B. A. 150.
- B. A. 154. Retail Store Management (3). Second semester. Prerequisite, Econ. 150.
- B. A. 156. Real Estate Principles and Practice (2). First semester. Prerequisite, Econ. 32 or 37.
- B. A. 157. Foreign Trade Procedure (3). Prerequisite, B. A. 150.
- B. A. 160. Personnel Management (3). Second semester. Prerequisite, Econ. 160.
- B. A. 162. Contemporary Trends in Labor Relations (3). First semester. Prerequisite, B. A. 160.



- B. A. 163. Industrial Relations (3). Second semester. Prerequisite, Econ. 160.
- B. A. 164. Recent Labor Legislation and Court Decisions (3). Second semester. Prerequisite, Econ 160. B. A. 160 recommended.
- B. A. 165. Office Management (3). First semester. Prerequisite, B. A. 11 or junior standing.
- B. A. 166. Business Communications (3). Second semester. Prerequisite, junior standing.
- B. A. 167. Job Evaluation and Merit Rating (2). Prerequisite, B. A. 160.
- B. A. 169. Industrial Management (3). Second semester. Prerequisite, B. A. (11) and 160.
- B. A. 170. Transportation I, Regulation of Transportation Services (3). First semester. Prerequisite, Econ. 32 or 37
- B. A. 171. Transportation II, Services, Rules, and Practices (3). Prerequisite, B. A. 170.
- B. A. 172. Transportation III, Motor Transportation (3). Prerequisite, B. A. 171.
- B. A. 173. Transportation IV, Overseas Shipping (3). Prerequisite, B. A. 170.
- B. A. 174. Commercial Air Transportation (3). Prerequisite, B. A. 170.
- B. A. 175. Airline Administration (3). Prerequisite, B. A. 174.
- B. A. 176. Problems in Airport Management (3). Prerequisite, B. A. 174.
- B. A. 177. Motion Economy and Time Study (3). Prerequisite, B. A. 169.
- B. A. 178. Production Planning and Control (2). Prerequisite, B. A. 169.
- B. A. 179. Problems in Supervision (3). Prerequisite, B. A. 169.
- B. A. 180. 181. Business Law (4, 4). First and second semesters. Prerequisite, senior standing. Required in all Bus. Adm. curriculums.
- B. A. 183. Law for Accountants (2). Prerequisite, B. A. 181.
- B. A. 184. Public Utilities (3). Second semester. Prerequisite, Econ. 32 or 37 and senior standing.
- B. A. 186. Real Estate Law and Conveyancing (2). Prerequisite, B. A. 156 and 180.
- B. A. 189. Government and Business (3). First semester. Prerequisite, Econ. 32 or 37. Senior standing.

## FOR GRADUATES

- B. A. 220. Managerial Accounting (3).
- B. A. 221, 222. Seminar in Accounting. Arranged.

- B. A. 226. Accounting Systems (3).
- B. A. 228. Research in Accounting.
- B. A. 229. Studies of Special Problems in the Fields of Control and Organization.
- B. A. 240. Seminar in Financial Management (1-3).
- B. A. 260. Problems in Sales Management (3).
- B. A. 251. Problems in Advertising (3).
- B. A. 252. Problems in Retail Store Management (3).
- B. A. 257. Seminar in Marketing Management.
- B. A. 258. Research in Marketing.
- B. A. 262. Seminar in Contemporary Trends in Labor Relations.
- B. A. 265. Development and Trends in Modern Industrial Management (3).
- B. A. 266. Research in Personnel Management.
- B. A. 267. Research in Industrial Relations.
- B. A. 270. Seminar in Air Transportation (3).
- B. A. 271. Theory of Organization (3).
- B. A. 277. Seminar in Transportation (3).
- B. A. 280. Seminar in Business and Government Relationships.
- B. A. 284. Seminar in Public Utilities (3).
- B. A. 299. Thesis.

### B. Economics

#### FOR GRADUATES AND ADVANCED UNDERGRADUATES

- Econ. 131. Comparative Economic Systems (3). Second semester. Prerequisite, Econ. 32 or 37.
- Econ. 132. Advanced Economic Principles (3). First semester. Prerequisite, Econ. 32.
- Econ. 134. Contemporary Economic Thought (3). Second semester. Prerequisite, Econ. 32.
- Econ. 136. International Economic Policies and Relations (3). First semester. Prerequisite, Econ. 32 or 37. Econ. 131 recommended.
- Econ. 137. Economic Planning and Post-war Problems (3). Second semester. Prerequisite, Econ. 32 or 37. Econ. 131 recommended.
- Econ. 140. Money and Banking (3). First semester. Prerequisite, Econ. 32 or 37.
- Econ. 141. Theory of Money, Credit, and Prices (3). Second semester. Prerequisites, Econ. 32 and 140.

- Econ. 142. Public Finance and Taxation (3). First semester. Prerequisite, Econ. 32 or 37.
- Econ. 149. International Finance and Exchange (3). Second semester. Prerequisite, Econ. 140. Econ. 141 recommended.
- Econ. 150. Marketing Principles and Organization (3). First semester. Prerequisite, Econ. 32 or 37.
- Econ. 160. Labor Economics (3). First semester. Prerequisite, Econ. 32 or 37.
- Econ. 161. Government and Social Security (3). Second semester. Prerequisites, G. & P. 4, Econ. 32.
- Econ. 170. Monopoly and Competition (3). Second semester. Prerequisite, Econ. 32 or 37.
- Econ. 171. Economics of American Industry (3). Second semester. Prerequisite, Econ. 32 or 37.

## FOR GRADUATES

- Econ. 230. History of Economic Thought (3). First semester. Prerequisite, Econ. 132.
- Econ. 231. Economic Theory in the Nineteenth Century (3). Second semester. Prerequisite, Econ. 230 or consent of instructor.
- Econ. 235. Seminar in International Economic Relations (3).
- Econ. 237, 238. Seminar in Economic Investigation (3, 3). Three hours a week, first and second semesters.
- Econ. 240. Comparative Banking Systems (3). Second semester.
- Econ. 242. Research in Governmental Fiscal Policies and Practices (3).
- Econ. 270. Seminar in Economics and Geography of American Industries (3).
- Econ. 299. Thesis. Arranged

## C. Geography

- Geog. 100, 102. Regional Geography of the United States and Canada (3, 3.) First and second semesters. Prerequisites, Geog. 1, 2 or Geo. 60, 61, or permission of instructor. Baker.
- Geog. 102. The Geography of Manufacturing in the United States and Canada (3). First semester. Clemens.
- Geog. 110, 111. Latin America (3, 3). First and second semesters. Crist.
- Geog. 115. The Peoples of Latin America (2). Second semester. Crist.

- Geog. 120. Economic Geography of Europe (3). First semester.  
Van Royen.
- Soc. 120, 121. Population. See Sociology.
- Geog. 122. Economic Resources and Development of Africa (3). Second semester.  
Van Royen.
- Geog. 123. Problems of Colonial Geography (3). First or second semester.  
Van Royen.
- Geog. 130, 131. Economic and Political Geography of Southern and Eastern Asia (3, 3). First and second semesters.  
Hu.
- Geog. 140, 141. Soviet Lands (3, 3). First and second semesters.
- Geog. 150. Problems of Map Evaluation I, Topographic Maps (3). First semester.  
Davies (Army Map Service).
- Geog. 151. Problems of Map Evaluation II, Non-topographic Special-use Maps (3). Second semester. Prerequisite, Geog. 150.  
Brierly (Army Map Service).
- Geog. 152. Problems and Practices of Photo Interpretation (3). Off-campus. First or second semester. Prerequisite, Geog. 31, or equivalent
- Geog. 160. Elementary Toponymy (3). First and second semesters. Prerequisite, Geog. 30 and one foreign language.  
Aiken (Army Map Service).
- Geog. 162. Fundamentals of Climatology (3). First semester. Baum.
- Geog. 170. Field Studies in Geography (3). First semester and approximately three weeks in the field immediately preceding the academic year.  
Staff.
- Geog. 180, 181. History, Nature and Methodology of Geography (3, 3). First and second semesters.  
Hu.
- Geog. 190, 191. Proseminar in Geography (3, 3). Staff.

## FOR GRADUATES

- Geog. 210. Seminar in Cartography (3). Karinen.
- Geog. 220. Advanced Geomorphology (3). Second semester. Van Royen.
- Geog. 230. Micro-Climatology (3). First semester. Prerequisite, Geog. 162 or consent of instructor.  
Baum.
- Geog. 231. Advanced General Climatology (3). Second semester. Prerequisite, Geog. 162 or consent of instructor.  
Baum.
- Geog. 248, 249. Special Studies in Meteorology and Climatology (3, 3).  
Baum.

- Geog. 250, 251. Recent Economic Trends in Latin America (3, 3). First and second semester Crist.
- Geog. 260, 261. Problems in the Geography of Europe and Africa (3, 3). First and second semesters. Van Royen.
- Geog. 270, 271. Special Studies in the Geography of China (3, 3). First and second semesters. Hu.
- Geog. 290, 291. Seminar in Geography. Credit to be arranged. First and second semesters. Staff.
- Geog. 292, 293. Research Work. (Credit to be arranged.) First and second semesters and summer.
- A. E. 212, 213. Land Utilization and Agricultural Production. See Agricultural Economics. Baker.

In addition to individual research projects, the preparation of the "Atlas of the World's Agricultural and Mineral Resources," a joint project of the University of Maryland, the United States Department of Agriculture, and the Department of the Interior, as well as cooperative projects with other government departments, provide facilities for graduate students to study under the guidance of experts in government service. The University of Maryland is cooperating also with the National Central University, in Nanking, China, in the preparation of an "Atlas of China." These atlases and other projects in preparation, may provide a vehicle of publication for parts of students' research work.

#### D. Government and Politics

##### FOR GRADUATES AND ADVANCED UNDERGRADUATES

- G. and P. 101. International Political Relations (3). First semester. Prerequisite, G. and P. 1. Plischke.
- G. and P. 102. International Law (3). Second semester. Prerequisite, G. and P. 1. Plischke.
- G. and P. 105. Recent Far Eastern Politics (3). First semester. Prerequisite, G. and P. 1. Steinmeyer.
- G. and P. 106. American Foreign Relations (3). First semester. Prerequisite, G. and P. 1. Plischke.
- G. and P. 110. Principles of Public Administration (3). First semester. Prerequisite, G. and P. 1. Ray.
- G. and P. 111. Public Personnel Administration (3). Second semester. Prerequisite, G. and P. 1. Mauck.
- G. and P. 112. Public Financial Administration (3). Second semester. Prerequisite, G. and P. 110 or Econ. 142. Mauck.

- G. and P. 124. Legislatures and Legislation (3). Second semester. Pre-  
 requisite, G. and P. 1. Burdette.
- G. and P. 131, 132. Constitutional Law (3, 3). First and second semes-  
 ters. Prerequisite, G. and P. 1. Dixon.
- G. and P. 133. Administration of Justice (3). Second semester. Pre-  
 requisite, G. and P. 1. Dixon.
- G. and P. 141. History of Political Theory (3). First semester. Pre-  
 requisite, G. and P. 1. Dixon.
- G. and P. 142. Recent Political Theory (3). Second semester. Prerequi-  
 site, G. and P. 1. Dixon.
- G. and P. 144. American Political Theory (3). First semester. Prerequi-  
 site, G. and P. 1. LaFuze.
- G. and P. 154. Problems of World Politics (3). Second semester. Pre-  
 requisite, G. and P. 1. Steinmeyer.
- G. and P. 174. Political Parties (4). First semester. Prerequisite, G. and  
 P. 1. Burdette.
- G. and P. 178. Public Opinion (3). First semester. Prerequisite, G. and  
 P. 1. Burdette.
- G. and P. 181. Administrative Law (3). Second semester. Prerequisite,  
 G. and P. 1. Ray.

## FOR GRADUATES

- G. and P. 201. Seminar in International Political Organization (3).  
 Steinmeyer.
- G. and P. 211. Seminar in Federal-State Relations (3). Ray.
- G. and P. 213. Problems of Public Administration (3). Ray.
- G. and P. 214. Problems of Public Personnel Administration (3). Mauck.
- G. and P. 216. Seminar in Government Administrative Planning and Man-  
 agement (3). Mauck.
- G. and P. 217. Government Corporations and Special Purpose Authorities  
 (3). Mauck.
- G. and P. 221. Seminar in Public Opinion (3). Burdette.
- G. and P. 224. Seminar in Political Parties and Politics (3). Burdette.
- G. and P. 225. Man and the State (3). Dixon.
- G. and P. 231. Seminar in Public Law (3). Ray.
- G. and P. 251. Bibliography of Government and Politics (3). Staff.
- G. and P. 261. Research in Government and Politics (3). Staff.

**G. and P. 281. Departmental Seminar (No Credit).** Registration for two semesters required for doctoral candidates. Staff.

**G. and P. 299. Thesis Course.** Arranged. Staff.

## CHEMISTRY

Laboratory fees in Chemistry are \$10.00 per course per semester.

### A. Analytical Chemistry

#### FOR GRADUATES

**Chem. 206, 208. Spectrographic Analysis (1, 1).** One three-hour laboratory a week. Prerequisite, Chem. 188, 190 and consent of the instructor. Registration limited. Prerequisite, consent of instructor. White.

**Chem. 221, 223. Chemical Microscopy (2, 2).** One lecture and three one-hour laboratory period a week, first and second semesters. Registration limited. Prerequisite, consent of instructor. Stuntz.

**Chem. 225. Polarography (2).** Two lectures a week.

**Chem. 226, 228. Advanced Quantitative Analysis (2, 2).** Two three-hour laboratory periods a week, first and second semesters. Prerequisite, consent of instructor. Stuntz.

**Chem. 266. Biological Analysis (2).** Two three-hour laboratory periods a week, second semester. Prerequisites, Chem. 19, 31, 32, 33, 34. Wiley.

### B. Biochemistry

#### FOR GRADUATES AND ADVANCED UNDERGRADUATES

**Chem. 161, 163. Biochemistry (2, 2).** Two lectures a week, first and second semesters. Prerequisites, Chem. 31, 33, or Chem. 35, 37.

**Chem. 162, 164. Biochemistry Laboratory (2, 2).** Two three-hour laboratory periods a week, first and second semesters. Prerequisites, Chem. 32, 34, or Chem. 36, 38.

#### FOR GRADUATES

**Chem. 261, 263. Advanced Biochemistry (2, 2).** Two lectures a week, first and second semesters. Prerequisites, Chem. 141, 143, or consent of instructor. Veitch.

**Chem. 262, 264. Advanced Biochemistry Laboratory (2, 2).** Two three-hour laboratory periods a week, first and second semesters. Prerequisite, consent of the instructor. Veitch.

**Chem. 268. Special Problems in Biochemistry (2-4).** Two to four three-hour laboratory periods a week, first and second semesters. Prerequisites, Chem. 161, 162, 163, 164 and consent of the instructor. Veitch.

## C. Inorganic Chemistry

## FOR GRADUATES AND ADVANCED UNDERGRADUATES

Chem. 101. Advanced Inorganic Chemistry (2). Two lectures a week, second semester. Prerequisites, Chem. 23 and 37, 38.

## FOR GRADUATES

Chem. 201, 203. The Chemistry of Rarer Elements (2, 2). Two lectures a week, first and second semesters. White.

Chem. 202, 204. Advanced Inorganic Laboratory (2, 2). Two three-hour laboratory periods a week, first and second semesters.

Chem. 205. Radiochemistry (2). Two lectures a week. Rollinson.

Chem. 207. Chemistry of Inorganic Complex Compounds (2). Two lectures a week.

Chem. 210. Radiochemistry Laboratory (1 or 2). One or two three-hour laboratory periods a week. Registration limited. Prerequisites, Chem. 205 (or concurrent registration therein) and consent of instructor. Rollinson.

Chem. 239. Physical Techniques in Chemistry (2). A survey of the tools available for the solution of chemical problems by means of physical techniques.

## D. Organic Chemistry

## FOR GRADUATES AND ADVANCED UNDERGRADUATES

Chem. 141, 143. Advanced Organic Chemistry (2, 2). Two lectures a week, first and second semesters. Prerequisites, Chem. 37, 38.

Chem. 142, 144. Advanced Organic Laboratory (2, 2). Two three-hour laboratory periods a week, first and second semesters. Prerequisites, Chem. 19 or 23, and Chem. 37, 38.

Chem. 146, 148. The Identification of Organic Compounds (2, 2). Two three-hour laboratory periods a week, first and second semesters. Prerequisites, Chem. 141, 143, or concurrent registration therein.

Chem. 150. Organic Quantitative Analysis (2). Two three-hour laboratory periods per week. The semi-micro determination of carbon, hydrogen, nitrogen, halogen and certain functional groups. First and second semesters.

(One or more courses from the following group 241-257 will customarily be offered each semester. Two of these courses will be presented in the academic year (1949-1950).)

Chem. 241. Stereochemistry (2). Two lectures a week. Woods.

Chem. 245. The Chemistry of the Steroids (2). Two lectures a week. Pratt.



- Chem. 249. Physical Aspects of Organic Chemistry (2).** Two lectures a week. Woods.
- Chem. 251. The Heterocyclics (2).** Two lectures a week. Pratt.
- Chem. 253. Organic Sulfur Compounds (2).** Two lectures a week. Dewey.
- Chem. 254. Advanced Organic Preparations (2 to 4).** Two to four three-hour laboratory periods a week, first and second semesters.
- Chem. 257. Organic Laboratory Methods (2).** Two lectures a week. Pratt.
- Chem. 258. The Identification of Organic Compounds, an Advanced Course (2 to 4).** Two to four three-hour laboratory periods a week, first and second semesters. Pratt.
- Chem. 260. Advanced Organic Laboratory (1 or 2).** One or two three-hour laboratory periods per week, first and second semesters. Pratt.
- Chem. 271. Glassblowing Laboratory (1).** A practical course designed to teach the student elementary glassblowing. First and second semesters. Carruthers.

#### E. Physical Chemistry

##### FOR GRADUATES AND ADVANCED UNDERGRADUATES

- Chem. 181, 183. Elements of Physical Chemistry (2, 2).** Two lectures a week, first and second semesters. Prerequisites, Chem. 19; Phys. 1, 2; Math. 10, 11.
- Chem. 182, 184. Elements of Physical Chemistry Laboratory (1, 1).** One three-hour laboratory period a week, first and second semesters. May be taken ONLY when accompanied by Chem. 181, 183.
- Chem. 187, 189. Physical Chemistry (3, 3).** Three lectures a week, first and second semesters. Prerequisites, Chem. 19 or 21; Phys. 20, 21; Math. 20, 21.
- Chem. 188, 190. Physical Chemistry Laboratory (2, 2).** Two three-hour laboratory periods a week, first and second semesters. A laboratory course for students taking Chem. 187, 189.

##### FOR GRADUATES

The common prerequisites for the following courses are Chem. 187, 189, and 188, 190, or their equivalent.

One or more courses of the group, 281-307, will be offered each semester, depending on demand.

- Chem. 281, 283. Theory of Solutions (2, 2).** Two lectures a week, first and second semesters. Prerequisite, Chem. 307. Svrbely.
- Chem. 285. Colloid Chemistry (2).** Two lectures a week. Pickard.

- Chem. 295. Heterogenous Equilibria (2). Two lectures a week. Pickard.  
 Chem. 299. Reaction Kinetics (3). Three lectures per week. Svirbely.  
 Chem. 303. Electrochemistry (3). Three lectures a week. Pickard.  
 Chem. 304. Electrochemistry Laboratory (2). Two three-hour laboratory periods a week. Prerequisite, consent of instructor. Staff.  
 Chem. 307. Chemical Thermodynamics (3). Three lectures a week. Svirbely.  
 Chem. 311. Physicochemical Calculations (2). Two lectures per week. Pickard.  
 Chem. 313. Molecular Structure (2). Two lectures per week. Brown.  
 Chem. 321. Quantum Chemistry (3). Three lectures a week. Brown.  
 Chem. 323. Statistical Mechanics and Chemistry (3) Three lectures a week. Brown.

#### F. Seminar and Research

- Chem. 351. Seminar (1). First and second semesters. Staff.  
 Chem. 360. Research. First and second semesters, summer session. Staff.

### COMPARATIVE LITERATURE

#### FOR GRADUATES AND ADVANCED UNDERGRADUATES

- Comp. Lit. 101. Introductory Survey of Comparative Literature (3). First semester. Zucker.  
 Comp. Lit. 102. Introductory Survey of Comparative Literature (3). Second semester. Zucker.  
 Comp. Lit. 103. The Old Testament as Literature (3). Second semester. Zucker.  
 Comp. Lit. 104. Chaucer (3). First semester. Same as Eng. 104. Harman.  
 Comp. Lit. 105. Romanticism in France (3). First semester. Staff.  
 Comp. Lit. 106. Romanticism in Germany (3). Second semester. Prahl.  
 Comp. Lit. 107. The Faust Legend in English and German Literature (3). First semester. Prahl.  
 Comp. Lit. 108. Some Non-English Influences on American Literature (3). Second semester. Zucker.  
 Comp. Lit. 109. Cervantes (3). Second semester. Staff.  
 Comp. Lit. 112. Ibsen (3) First semester. Zucker.  
 Comp. Lit. 113. Prose of the Renaissance (3). Second semester. Same as Eng. 113. (Not offered in 1949-1950). Zeerveld.

- Comp. Lit. 114. The Greek Drama (3). First semester. Prahl.
- Comp. Lit. 121. Milton (3). Same as Eng. 121. Murphy.
- Comp. Lit. 129, 130 Literature of the Romantic Period (3, 3) Three hours a week, first and second semesters. Same as Eng. 129, 130. Weber.
- Comp. Lit. 144. Modern Drama (3). First semester. Same as Eng. 144. Weber.
- Comp. Lit. 145. The Modern Novel (3). Second semester. Same as Eng. 145. Cardwell.
- Comp. Lit. 155, 156. Four Major American Writers (3, 3). Three hours a week, first and second semesters. Same as Eng. 155, 156. Gravely.

## FOR GRADUATES

- Comp. Lit. 201. Bibliography and Methods (3). First semester. Same as Eng. 201. Mooney.
- Comp. Lit. 202. The History of the Theatre (3) Second semester. Zucker.
- Comp. Lit. 203. Schiller (3). Same as German 204. Prahl.
- Comp. Lit. 204. Medieval Romances (3). First semester. Same as Eng. 204. (Not offered in 1949-1950.)
- Comp. Lit. 205. Georges Duhamel, Poet, Dramatist, Novelist (3). First semester. Same as French 204. Falls.
- Comp. Lit. 206, 207. Seminar in Sixteenth Century Literature (3, 3). First and second semesters. Same as Eng. 206 and 207. McManaway.
- Comp. Lit. 208. The Philosophy of Goethe's Faust (3). Same as German 208. Zucker.
- Comp. Lit. 216, 217. Literary Criticism (3, 3). Three hours a week, first and second semesters. Same as Eng. 216, 217. Staff.
- Comp. Lit. 227, 228. Problems in American Literature (3, 3). Same as Eng. 227, 228. (Not offered in 1949-1950.)

## DAIRY

- Dairy 100. Dairy Cattle Management (1). One laboratory period a week, first semester. Prerequisite, Dairy 1. Cairns.
- Dairy 101. Dairy Production (3). Two lectures and one laboratory period a week, second semester. Prerequisites, Dairy 1, and A. H. 110. Cairns.
- Dairy 105. Dairy Breeds and Breeding (2). First semester. Prerequisites, Dairy 1, Zool. 104, A. H. 120. Cairns.

- Dairy 108. Dairy Technology (4).** Two lectures and two laboratory periods a week, first semester. Prerequisites, Dairy 1, Bact. 133, Chem. 1, 3. Laboratory fee, \$3.00. Gould, Johnson.
- Dairy 109. Market Milk (4).** Two lectures and two laboratory periods a week, second semester. Prerequisites, Dairy 1, Bact. 1, 133, Chem. 1, 3. Laboratory fee, \$3.00. Gould, Johnson.
- Dairy 110. Butter and Cheese Making (4).** Two lectures and two laboratory periods a week, second semester. Prerequisites, Dairy 1, Bact. 1, Chem. 1, 3. (Alternate years, not given in 1949-1950.) Warren.
- Dairy 111. Concentrated Milk Products (2).** One lecture and one laboratory period a week, second semester. Prerequisites, Dairy 1, 108, 114. (Alternate years, not given in 1949-1950.) Laboratory fee, \$3.00. Warren.
- Dairy 112. Ice Cream Making (4).** Two lectures and two laboratory periods a week, first semester. Prerequisites, Dairy 1, 108, 114. Warren.
- Dairy 114. Special Laboratory Methods (4).** Two lectures and two laboratory periods a week, second semester. Prerequisites, Dairy 1, 108, Bact. 1, 133, Chem. 1, 3, 19, 31, 32, 33, 34. Laboratory fee, \$3.00. Gould, Johnson.
- Dairy 120, 121. Dairy Seminar (1, 1).** One hour a week, first and second semesters. Prerequisites, students majoring in Dairy Husbandry, Dairy 1, 101; students majoring in Dairy Products Technology, Dairy 1, 108. Cairns.
- Dairy 124. Special Problems in Dairying (2-4).** First and second semesters. Prerequisites, students majoring in Dairy Husbandry, Dairy 1, 101; students majoring in Dairy Products Technology, Dairy 1, 108, 109. Credit in accordance with the amount and character of work done. Staff.
- Dairy 201. Advanced Dairy Production (3).** First semester. Prerequisite, Dairy 101, or equivalent. Cairns.
- Dairy 202. Advanced Dairy Technology (3).** First semester. Prerequisites, Dairy 108, 114, or equivalent. Gould.
- Dairy 204. Methods of Dairy Research (1-5).** First and second semesters. Prerequisite, permission of professor in charge of work. Staff.
- Dairy 205. Seminar (1).** First and second semesters. Staff.
- Dairy 208. Research (3-8).** Credit to be determined by amount and quality of work done. Staff.

## EDUCATION

A student in Education has the option of qualifying for the degree of Master of Arts or for the degree of Master of Education.

### Special Departmental Requirements and Information

#### MASTER OF ARTS AND MASTER OF EDUCATION

Students who do not complete the requirements for the Master's degree in Education within six years of the date of matriculation may be required to take supplementary course work at the rate of two semester hours for each year the completion of the course requirements is deferred beyond six years, or to take special examinations based upon up-to-date materials in courses more than six years old.

A qualifying written examination is required of all candidates for a degree, to be taken after the student has successfully completed ten semester hours, and before he has completed nineteen hours (Master of Arts), or twenty-five hours (Master of Education). This examination covers the general information a student should have in the field of education. To assist in the choice of reading in preparation for the examination, a reading list has been prepared and is available in the office of the College of Education. The examination is usually given on the third Saturday of January and May and on the fourth Saturday on July, simultaneously at College Park and Baltimore.

Candidates for the degree of Master of Education who are high school teachers not preparing for administrative positions are advised to take at least twelve semester hours in their subject fields.

In addition to the general requirements for admission, applicants for unconditional admission with a major in Education must have had sixteen semester hours of undergraduate work in Education of acceptable quality, equivalent in character to the eighteen hours required in the junior and senior years of the University of Maryland.

## DOCTORAL DEGREES

The Department of Education offers work towards degrees of Doctor of Philosophy and Doctor of Education.

Each candidate is required to achieve exceptional ability in at least one major area of competence. For the Ph.D., he must, in addition, achieve competence in at least one minor area outside the field of education. For both degrees, the candidate is required to develop competence in approximately six areas, including the major and minor. The choice of specific areas is optional with the student and his faculty adviser.

The areas of specialization in education from which a student may select his major, his minor, and approximately four other areas of competence, are as follows:

Adult Education	Home Economics Education
Curriculum and Instruction	Human Growth and Development
Educational Administration and Supervision	Industrial Arts Education
Elementary Education	Nursery School Education
Guidance and Personnel	Research Principles and Techniques
Health and Physical Education	Secondary Education
Higher Education	Vocational-Industrial Education
History, Philosophy, and Comparative Education	

In addition to the general University requirements for a doctor's degree the following additional requirements must be met by students proposing to major in one of the above fields.

1. Qualifying examination, oral or written, or both, at the discretion of the department, covering student's undergraduate and first year of graduate preparation, in education and related fields, to be taken as soon as possible after completion of the first year of graduate work and in any event required before receiving the department's official permission to take work beyond the Master's degree with the purpose of applying for candidacy for the doctorate.

2. The preliminary examination for admission to candidacy for the doctor's degree will include a written examination covering the student's preparation in major and minor fields, and an oral examination covering his plan of research for the doctoral dissertations or project.

In general the requirements for the Doctor of Education degree are the same as those for the degree Doctor of Philosophy. The most important difference between the two degrees are as follows:

1. The purpose of the Doctor of Education degree is to prepare persons of exceptional competence to work in the field. The emphasis for this degree is placed on broad understanding, whereas that for the degree of Doctor of Philosophy is placed on specialized research.

2. A reading knowledge of foreign languages is required for the degree of Doctor of Education only when needed for research and study in the doctoral program.

3. In meeting residence requirements, a candidate for the Ed.D. degree may substitute two summers of residence for one semester of residence or four summers for two semesters.

4. The doctoral study for the Ed. D. consists of a project rather than a dissertation. The project requires research to meet a practical field problem. Credit of six to nine hours is allowed for a project as compared with twelve to eighteen hours for a Ph.D. dissertation.

## A. History, Principles, Curriculum, and Administration

## FOR GRADUATES AND ADVANCED UNDERGRADUATES

- Ed. 100. History of Education I (2). First semester Wiggin.
- Ed. 101. History of Education II (2).
- Ed. 102. History of Education in the United States (2). Second semester.  
Wiggin.
- Ed. 105. Comparative Education—European (2). First semester.  
Benjamin.
- Ed. 106. Comparative Education—Latin America (2). Second semester.  
Benjamin.
- Ed. 107. Philosophy of Education I (2).
- Ed. 108. Philosophy of Education II (2).
- Ed. 110. The Teacher and School Administration (2).
- Ed. 114. Educational Foundations (2).
- Ed. 121. The Language Arts in the Elementary School (2).
- Ed. 122. The Social Studies in the Elementary School (2).
- Ed. 123. The Child and the Curriculum (2).
- Ed. 124. Creative Expression in the Elementary School (2).
- Ed. 125. Creative Expression in the Elementary School II (2). Prerequisite, Ed. 124 or taken concurrently.
- Ed. 126. The Elementary School Curriculum (2).
- \*Ed. 130. Theory of the Junior High School (2). Newell.
- \*Ed. 131. Theory of the Senior High School (2). Newell.
- Ed. 133. Methods of Teaching the Social Studies (2). Offered in Baltimore.
- Ed. 134. Materials and Procedures for the Senior High School Core Curriculum (2).
- Ed. 140. Curriculum, Instruction, and Observation (3). Second semester.  
Staff.

Graduate credit is allowed only by special permission. Separate sections are offered in the following subject-matter areas: English, Social Studies, Foreign Languages, Science, Mathematics, Art Education, Business Education, Industrial Education, Music Education, Nursing Education, Physical Education for Men, and Physical Education for Women.

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\* Credit is accepted for Ed. 130 or for Ed. 131, but not for both courses.

- Ed. 141. High School Course of Study—English (2). Bryan.
- Ed. 142. High School Course for Study—Literature (2). Bryan.
- Ed. 144. Materials and Procedure for the Junior High School Core Curriculum (2).
- Ed. 145. Principles of High School Teaching (2). First and second semesters. Brechbill.
- Ed. 146. The Teaching of Physics (3). Second semester. Laboratory fee, \$6.00. R. Morgan
- Ed. 147. Audio-Visual Education (2). First semester. Laboratory fee, \$1.00. Brechbill.
- Ed. 150. Educational Measurement (2). First and second semesters. Brechbill.
- Ed. 151. Remedial Reading Instruction (2). Schindler.
- Ed. 152. The Adolescent: Characteristics and Problems (2).
- Ed. 153. The Improvement of Reading (2). Schindler.
- Ed. 160. Educational Sociology—Introductory (2). First and second semesters. Schindler.
- Ed. 161. Guidance in Secondary Schools (2). Sievers.
- Ed. 162. Mental Hygiene in the Classroom (2).
- Ed. 170. Introduction to Special Education (2).
- Ed. 171. Education of Retarded and Slow-Learning Children (2).
- Ed. 183. Recent Trends in Curriculum and Methods in Elementary School (2).
- Ed. 184. Outdoor Education (6).  
in summer.
- Ed. 191. Principles of Adult Education (2). Wiggin.
- Ed. 195. Teaching Traffic Safety and Automobile Operation (2). Offered in Summer School.

## FOR GRADUATES

- Ed. 203. Problems in Higher Education (2). Benjamin.
- Ed. 205. Seminar in Comparative Education (2). Benjamin.
- Ed. 207. Seminar in Philosophy of Education (2).
- Ed. 209. Seminar in History of Education (2). Wiggin.
- Ed. 210. The Organization and Administration of Public Education (2).  
First semester. Newell.



- Ed. 211. The Organization, Administration, and Supervision of Secondary Schools (2). Second semester. Newell.
- Ed. 212. School Finance and Business Administration (2). VanZwoll
- Ed. 213. Administration and Teaching in Junior High School (2).
- Ed. 214. School Buildings and Equipment (2). VanZwoll.
- Ed. 215. Public Education in Maryland (2). Newell.
- Ed. 216. High School Supervision (2). Newell.
- Ed. 217. Administration and Supervision in Elementary Schools (2).
- Ed. 218. School Surveys (2-6). Newell.
- Ed. 219. Seminar in School Administration (2). VanZwoll.
- Ed. 220. Pupil Transportation (2).
- Ed. 221. Functional School Plant Planning (2). VanZwoll.
- Ed. 222. Seminar in Supervision (2). Newell.
- Ed. 223. Practicum in Personnel Relationships (2-6). Newell.
- Ed. 224. Internship in School Administration (12-16). Newell.
- Ed. 225. School Public Relations (2). VanZwoll.
- Ed. 226. Child Accounting (2). VanZwoll.
- Ed. 227. Public School Personnel Administration (2). VanZwoll.
- Ed. 229. Seminar in Elementary Education (2). Schindler.
- Ed. 232. Student Activities in the High School (2).
- Ed. 236. Curriculum Development in the Secondary School (2).
- Ed. 239. Seminar in Secondary Education (2).
- Ed. 242. Coordination in Work-Experience Programs (2). Brown.
- Ed. 243. Application of Theory and Research to Arithmetic in Elementary Schools (2). Schindler.
- Ed. 244. Application of Theory and Research to the Language Arts in Elementary Schools (2). Schindler.
- Ed. 245. Applications of Theory and Research to High School Teaching (2). Brechbill.
- Ed. 247. Seminar in Science Education (2).
- Ed. 248. Seminar in Vocational Education (2). Hornbake.
- Ed. 250. Analysis of the Individual (2). Second semester. Sievers.
- Ed. 261. Counseling Techniques (2). Sievers.
- Ed. 262. Occupational Information (2). Second semester. Sievers.

- Ed. 263, 264. Aptitudes and Aptitude Testing (2, 2). Offered in Baltimore.
- Ed. 268. Seminar in Educational Sociology (2). Schindler.
- Ed. 269. Seminar in Guidance (2). Sievers.
- Ed. 278. Seminar in Special Education (2).
- Ed. 279. Seminar in Adult Education (2). Wiggin.
- Ed. 280. Research Methods and Materials in Education (2).
- Ed. 281. Source Materials in Education (2).
- Ed. 289. Research (1-6). First and second semesters.

### B. Business Education

#### FOR GRADUATES AND ADVANCED UNDERGRADUATES

- B. Ed. 100. Techniques of Teaching Office Skills (2). Patrick.
- B. Ed. 101. Methods and Materials in Teaching Office Skills (2).
- B. Ed. 102. Methods and Materials in Teaching Bookkeeping and Related Subjects (2).
- B. Ed. 103. Basic Business Subjects in the Junior High School (2).
- B. Ed. 104. Basic Business Education in the Secondary Schools (2).

#### FOR GRADUATES

- B. Ed. 200. Administration and Supervision of Business Education (2).
- B. Ed. 255. Principles and Problems of Business Education (2). Patrick.

### C. Home Economics Education

#### FOR GRADUATES AND ADVANCED UNDERGRADUATES

- H. E. Ed. 102. Problems in Teaching Home Economics (3). First semester.
- H. E. Ed. 140 Curriculum, Instruction, and Observation (3) Second semester.

#### FOR GRADUATES

- H. E. Ed. 200. Seminar in Home Economics Education (2).
- H. E. Ed. 202. Trends in the Teaching and Supervision of Home Economics (2-4)

### D. Human Development Education

#### FOR GRADUATES AND ADVANCED UNDERGRADUATES

- H. D. Ed. 100, 101. Principles of Human Development I and II (2, 2). Prescott and Staff.

- H. E. Ed. 102, 103, 104. Child Development Laboratory I, II, and III (2, 2, 2). Prescott and Staff.
- H. D. Ed. 112. Scientific Concepts in Human Development (3). Prescott and Staff.
- H. D. Ed. 113. Laboratory in Behavior Analysis (3). Prescott and Staff.

## FOR GRADUATES

- H. D. Ed. 200. Organic Processes and Factors in Human Development (2). First semester. Prescott and Staff.
- H. D. Ed. 201. Affectional Relationships and Processes in Human Development (2). Second semester. Prescott and Staff.
- H. D. Ed. 202. Socialization Processes in Human Development (2). Prescott and Staff.
- H. D. Ed. 203. Peer-culture and Group Processes in Human Development (2). Prescott and Staff.
- H. D. Ed. 210. "Self"-developmental Processes in Human Behavior (2). Prescott and Staff.
- H. D. Ed. 211. "Self"-adjustment Processes in Human Development (2). Prescott and Staff.
- H. D. Ed. 212. Advanced Scientific Concepts in Human Development (3). Prescott and Staff.
- H. D. Ed. 213. Advanced Laboratory in Behavior Analysis (3). Prescott and Staff.
- H. D. Ed. 220, 221. Educational Implications of Human Development Research (2, 2). Prescott and Staff.
- H. D. Ed. 230, 231. Field Program in Child Study I and II (2, 2). Prescott and Staff.

## E. Industrial Education

## FOR GRADUATES AND ADVANCED UNDERGRADUATES

- Ind. Ed. 105. General Shop (2). Second semester.
- Ind. Ed. 140. Curriculum, Instruction, and Observation (3). First semester. Hornbake.
- Ind. Ed. 150. Training Aids Development (2). Second semester. Wall.
- Ind. Ed. 164. Shop Organization and Management (2) Second semester. Wall.
- Ind. Ed. 165. Modern Industry (2). Summer session
- Ind. Ed. 166. Educational Foundations of Industrial Arts (2). First semester. Brown and Hornbake.

- Ind. Ed. 167. Problems in Occupational Education (2). Offered in Baltimore.
- Ind. Ed. 168. Trade or Occupational Analysis (2). First semester.
- Ind. Ed. 169. Construction of Vocational and Occupational Courses of Study (2).
- Ind. Ed. 170. Principles and Practices of Vocational Education (2). Summer session.
- Ind. Ed. 171. History of Vocational Education (2). Summer session.

## FOR GRADUATES

- Ind. Ed. 207. Philosophy of Industrial Arts Education (2). First semester. Hornbake.
- Ind. Ed. 214. School Shop Planning and Equipment Selection (2). Second semester. Hornbake.
- Ind. Ed. 216. Supervision of Industrial Arts (2). Second semester. Hornbake.
- Ind. Ed. 220. Organization, Administration, and Supervision of Vocational Education (2).
- Ind. Ed. 240. Research in Industrial Arts and Vocational Education (2). First and second semesters. Staff.
- Ind. Ed. 241. Content and Method of Industrial Arts (2). Second semester. Hornbake.
- Ind. Ed. 248. Seminar in Industrial Arts and Vocational Education (2).

## F. Nursery School-Kindergarten Education

## FOR GRADUATES AND ADVANCED UNDERGRADUATES

- C. Ed. 100. Child Development I—Infancy (3). First semester. McNaughton.
- C. Ed. 101. Child Development II—Early Childhood (3). Second semester. McNaughton.
- C. Ed. 102. Child Development III—The Child from 5 to 10 (2). First and second semesters.
- C. Ed. 110. Child Development IV (3). First and second semesters. Laboratory fee, \$1.00.
- C. Ed. 112. Play and Play Materials (2). Flannery.
- C. Ed. 113. Education of the Young Child I (2). McNaughton.
- C. Ed. 114. Education of the Young Child II—The Social and Emotional Needs of the Young Child (2). McNaughton.

- C. Ed. 115. Children's Activities and Activities Materials (3). Second semester.
- C. Ed. 116, 117. Creative Expressions; Art, Music, Dance (2-3, 2-3).
- C. Ed. 119. Curriculum, Instruction, and Observation—Cooperative Nursery School (2-3).
- C. Ed. 140. Curriculum, Instruction, and Observation—Nursery School (3). First and second semesters. Whitney.
- C. Ed. 145. Guidance in Behavior Problems (2). First semester. Whitney.
- C. Ed. 150. Curriculum, Instruction, and Observation—Kindergarten (2-3). Second semester.
- C. Ed. 160. Speech Problems in Child Development (2).
- C. Ed. 161. Behavior Problems of Childhood and Adolescence (2).
- C. Ed. 165. Leadership Training (2).

### G. Nursing Education

#### FOR GRADUATES AND ADVANCED UNDERGRADUATES

- N. Ed. 112. School of Nursing Finance and Administration (3). Offered in Baltimore.
- N. Ed. 115, 116. Ward Management and Clinical Teaching (2, 2). Offered in Baltimore.
- N. Ed. 190. Principles of Pediatric Nursing (3). Offered in Baltimore.

### ENGINEERING

#### A. Aeronautical Engineering

#### FOR GRADUATES AND ADVANCED UNDERGRADUATES

- Aero. E. 101, 102. Aerodynamics (3, 2). Two lectures and one laboratory period a week, first and second semesters. Prerequisites, Math. 20, 21; Phys. 20, 21.
- Aero. E. 103. Airplane Detail Drafting (1). One laboratory period a week, first semester. Prerequisite, Dr. 1, 2, 3.
- Aero. E. 104. Airplane Layout Drafting (1). Two laboratory periods a week, second semester. Prerequisite, Aero. E. 103.
- Aero. E. 105, 106. Airplane Fabrication Shop (1, 2). One laboratory period a week, first and second semesters. Prerequisite, Shop 3.
- Aero. E. 107, 108. Airplane Design (4, 4). Two lectures and two laboratory periods a week, first and second semesters. Prerequisites, Mech. 50; Aero. E. 102, 104.

- Aero. E. 109, 110. Aircraft Power Plants (4, 4).** Three lectures and one laboratory period a week, first and second semesters. Prerequisites, Mech. 50; M. E. 100, 101.
- Aero. E. 111, 112. Aeronautical Laboratory (2, 2).** One lecture and one laboratory period a week, first and second semesters.
- Aero. E. 113, 114. Mechanics of Aircraft Structures (3, 3).** Three hours a week. Prerequisites, Mech. 50 and Math. 64.

#### FOR GRADUATES

- Aero. E. 200, 201. Advanced Aerodynamics (3, 3).** Two lectures and one laboratory period a week, first and second semesters. Prerequisites, Aero. E. 101, 102; Math. 64.
- Aero. E. 202, 203. Advanced Aircraft Structures (3, 3).** Two lectures and one laboratory period a week, first and second semesters. Prerequisites, Aero. E. 115, 116.
- Aero. E. 204, 205. Aircraft Dynamics (3, 3).** Two lectures and one laboratory period a week, first and second semesters. Prerequisites, Mech. 50; Math. 64.
- Aero. E. 206, 207. Advanced Aircraft Power Plants (3, 3).** Two lectures and one laboratory period a week, first and second semesters. Prerequisites, M. E. 100, 101; Aero. E. 109, 110.
- Aero. E. 208, 209. Advanced Aircraft Design and Construction (3, 3).** One lecture and two laboratory periods a week, first and second semesters. Prerequisites, Aero. E. 107, 108; Math. 64.
- Aero. E. 210. Aerodynamic Theory (3).** Three lectures a week. A study of the application of hydrodynamic theory to engineering problems. Circulation theory of lift, induced effects, velocity potential and stream function, conformal transformation.
- Aero. E. 211. The Design and Use of Wind Tunnels (Supersonic) (3).** Three lectures a week. Application of aerodynamic theory to nozzle design and power computation for supersonic tunnels; design of dryers, balances and optical equipment.
- Aero. E. 212. Bodies at Supersonic Speeds (3).** Three lectures a week. Brief review of gas dynamics, drag, lift, stability, and damping on a body in a supersonic stream. Special aerodynamics problems in the design of supersonic missiles. Methods for obtaining accurate test data on the aerodynamic characteristics of supersonic missiles.

#### B. Chemical Engineering

##### FOR GRADUATES AND ADVANCED UNDERGRADUATES

- Ch. E. 103 f.s. Elements of Chemical Engineering (3, 3).** Three hours a week, both semesters. Prerequisites, Chem. 1, 3; Phys. 20, 21. Huff.

- \*Ch. E. 104. Chemical Engineering Seminar (1).** One hour a week, both semesters, Prerequisite, permission of department. Bonney.
- Ch. E. 105 f.s. Advanced Unit Operations (5, 5).** Two lectures and one all-day laboratory a week, both semesters. Prerequisites, Ch. E. 103 f,s; Chem. 187, 188, 189, 190. Laboratory fee, \$8.00 per semester. Bonney.
- Ch. E. 106 f.s. Minor Problems (6, 6).** Six hours a week, both semesters. Prerequisites, Ch. E. 105 or simultaneous registration therein. (Not offered 1949-1950.) Huff, Bonney and Staff.
- Ch. E. 107. Fuels and Their Utilization (3).** Three hours a week, second semester. Prerequisite, Ch. E. 103 f,s, or permission of the department. Huff.
- Ch. E. 108 f,s. Chemical Technology (2, 2).** Two hours a week, both semesters. Prerequisite, Ch. E. 103, or simultaneous registration therein or permission of the department. Bonney.
- Ch. E. 109 f,s. Chemical Engineering Thermodynamics (2, 2).** Two hours a week, both semesters. Prerequisites, Ch. E. 103, f,s; Chem. 187, 188, 189, 190, or permission of the department. Bonney.
- Ch. E. 110. Advanced Chemical Engineering Calculations (3).** Three hours a week, first semester. Prerequisites, Math. 20, 21; Ch. E. 103 f.s. Bilbrey.
- Ch. E. 114. Applications of Electrochemistry (4).** First semester. Three lecture hours and three laboratory hours a week. Prerequisite, consent of instructor. Laboratory fee, \$8.00. Smatko.
- Ch. E. 160. 161. Metallurgical Technology (2, 2).** First and second semesters. Two hours a week. Prerequisites, Ch. E. 60, 61 and Ch. E. 103 f,s, or permission of the instructor Gottschalk.
- Ch. E. 180, 181. Unit Operations in Metallurgy (5, 5).** First and second semesters. Two lectures and one all-day laboratory period a week. Prerequisites, Ch. E. 103 f,s; Ch. E. 21; Chem. 187, 188, 189, 190, or permission of the instructor. Laboratory fee, \$8.00 per semester. Gottschalk.

## FOR GRADUATES

- Ch. E. 201 f.s. Graduate Unit Operations and Processes (5, 5 or more).** One hour conference, three or more three-hour laboratory periods a week, both semesters. Prerequisite, permission of the department. Laboratory fee, \$8.00 per semester. Bonney.
- Ch. E. 202, f.s. Gas Analysis. (3).** One lecture and two three-hour laboratory periods a week, one semester, to be arranged. Prerequisite, permission of the department. Laboratory fee, \$8.00 per semester. Bonney.

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\* The contents of this course are constantly changing so a student may receive a number of credits by re-registering.

- Ch. E. 203. Graduate Seminar (1). One hour a week, each semester. The content of this work is constantly changing, so a student may receive a number of credits by re-registering. Prerequisite, permission of the department. Bonney.
- Ch. E. 205. Research and Chemical Engineering. Prerequisites and credits to be arranged for individuals. Laboratory fee, \$8.00 per semester. Huff, Bonney.
- Ch. E. 207 f.s. Plant Design Studies (3, 3). Three hours a week, both semesters. Prerequisite, permission of the department. Huff.
- Ch. E. 209 f.s. Plant Design Studies Laboratory (3, 3). Three laboratory periods a week, both semesters. Prerequisite, permission of the department. Laboratory fee, \$8.00 per semester. Bonney.
- Ch. E. 210 f.s. Gaseous Fuels (2, 2). Two hours a week, both semesters. Prerequisite, permission of the department. Huff.
- Ch. E. 214. Corrosion and Metal Protection (4). Second semester. Four lecture hours a week. Prerequisites, Ch. E. 114 or Chem. 187, 189 or Chem. 188, 190, or consent of the instructor. Smatko.

### C. Civil Engineering

#### FOR GRADUATES AND ADVANCED UNDERGRADUATES

- C. E. 100. Theory of Structures (4). Three lectures and one laboratory period a week, second semester. Prerequisite, Mech. 50.
- C. E. 101. Soil Mechanics (3). Two lectures and one laboratory period a week, second semester. Prerequisites, Mech. 50 and Mech. 53.
- C. E. 102. Structural Design (6). Four lectures and two laboratory periods a week, first semester. Prerequisite, C. E. 100.
- C. E. 103. Concrete Design (6). Four lectures and two laboratory periods a week, second semester.
- C. E. 104. Water Supply (3). Two lectures and one laboratory period a week, first semester. Prerequisite, C. E. 50.
- C. E. 105. Sewerage (3). Two lectures and one laboratory period a week, second semester. Prerequisite, C. E. 50.
- C. E. 106. Elements of Highways (3). Two lectures and one laboratory period a week, first semester. Prerequisite, C. E. 101.

#### FOR GRADUATES

- C. E. 200. Advanced Properties of Materials (3). First or second semester. Prerequisite, Mech. 52 or equivalent.
- C. E. 201. Advanced Strength of Materials (3). First or second semester. Prerequisites, Mech. 50, 51 or equivalent.



- C. E. 202. Applied Elasticity (3). First or second semester. Prerequisite, Math. 64 or equivalent.
- C. E. 203. Soils Mechanics (3). First or second semester. Prerequisite, C. E. 106 or equivalent.
- C. E. 204. Advanced Foundations (3). First or second semester. Prerequisites, C. E. 102, 103, 106 or equivalent.
- C. E. 205. Highway Engineering (3). First or second semester. Prerequisite, C. E. 101 or equivalent.
- C. E. 206. Theory of Concrete Mixtures (3). First and second semester. Prerequisite, Mech. 52 or equivalent.
- C. E. 207. Advanced Structures (4). Three lectures and one laboratory period a week. Prerequisites, C. E. 102, 103.
- C. E. 208. Advanced Sanitation (3). First or second semester. Prerequisite, graduate standing in civil engineering.
- C. E. 209. Advanced Water Supply (3). First or second semester. Prerequisite, C. E. 104 or equivalent.
- C. E. 210. Advanced Sewerage (3). First or second semester. Prerequisite, C. E. 105 or equivalent.
- C. E. 211. Sanitary Engineering Design (3). First or second semester. Prerequisites, C. E. 104, C. E. 105 or equivalent.
- C. E. 212. Research. Credit in accordance with work done. First and second semesters.
- C. E. 213. Seminar. Credit in accordance with work outlined by the civil engineering staff. Prerequisite, graduate standing in civil engineering.

#### D. Electrical Engineering

##### FOR GRADUATES AND ADVANCED UNDERGRADUATES

- E. E. 100. Alternating-Current Circuits (6). Five lectures and one laboratory period a week, first semester. Prerequisites, Math. 21, Phys. 21 and E. E. 1.
- E. E. 101. Engineering Electronics (6). Five lectures and one laboratory period a week, second semester. Prerequisite, E. E. 100.
- E. E. 102, 103. Alternating-Current Machinery (4, 4). Three lectures and one laboratory period a week, first and second semesters. Prerequisites, E. E. 65 and E. E. 100.
- E. E. 104. Communication Circuits (3). Three lectures a week, second semester. Prerequisites, E. E. 60 and E. E. 100.
- E. E. 105, 106 Radio Engineering (4, 4). Three lectures and one laboratory period a week, first and second semesters. Prerequisite, E. E. 101.

- E. E. 108. **Electric Transients (3)**. Three lectures a week, first semester. Prerequisite, E. E. 101.
- E. E. 109. **Principles of Radar (3)**. Three lectures a week, second semester. Prerequisite, E. E. 105.
- E. E. 114. **Applied Electronics (3)**. Three lectures a week (including demonstration lectures), first semester. Prerequisite, E. E. 101.
- E. E. 116. **Alternating-Current Machinery Design (3)**. Two lectures and one calculation period a week, second semester. Prerequisite, concurrent registration in E. E. 103.
- E. E. 117. **Power Transmission and Distribution (3)**. Three lectures a week, first semester. Prerequisite, concurrent registration in E. E. 102.
- E. E. 120. **Electromagnetic Waves (3)**. Three lectures a week, first semester. Prerequisites, senior standing in electrical engineering or physics and B average in mathematics.
- E. E. 160, 161. **Vacuum Tubes (3, 3)**. Three lectures a week, first and second semesters. Prerequisites, senior standing in electrical engineering or physics and B average in mathematics.

## FOR GRADUATES

- E. E. 200. **Symmetrical Components (3)**. Three lectures a week, first semester. Prerequisite, E. E. 103. (Not offered in 1949-1950.)
- E. E. 201. **Electromagnetic Theory (3)**. Three lectures a week, second semester. Prerequisite, E. E. 120.
- E. E. 202, 203. **Transients in Linear Systems (3, 3)**. Three lectures a week, first and second semesters. Prerequisite, undergraduate major in electrical or mechanical engineering or physics.
- E. E. 204, 205. **Advanced Circuit Analysis (3, 3)**. Three lectures a week, first and second semesters. Prerequisite, undergraduate major in electrical engineering or physics. (Not offered in 1949-1950.)
- E. E. 206, 207. **Ultra-High-Frequency Techniques (3, 3)**. Three lectures a week, first semester; two lectures and one laboratory period a week, second semester. Prerequisite, E. E. 201.
- E. E. 209. **Stability in Power Systems (3)**. Three lectures a week, second semester. Prerequisite, E. E. 200. (Not offered in 1949-1950.)
- E. E. 210, 211. **Advanced Radio Engineering (3, 3)**. Three lectures a week, first and second semesters. Prerequisite, E. E. 106. (Not offered in 1949-1950.)
- E. E. 212, 213. **Automatic Regulation (3, 3)**. Three lectures a week, first and second semesters. Prerequisite, undergraduate major in electrical or mechanical engineering or physics.

- E. E. 215, 216. Radio Wave Propagation (3, 3).** Three lectures a week, first and second semesters. Prerequisite, E. E. 120.
- E. E. 222 Graduate Seminar (1).** First semester. Prerequisite, approved application for candidacy to the degree of Master of Science or Doctor of Philosophy in electrical engineering.
- E. E. 232. Active Network Analysis (3).** Three lectures a week, first semester. Prerequisite, E. E. 202 or E. E. 204.
- E. E. 233. Network Synthesis (3).** Three lectures a week, second semester. Prerequisite, E. E. 232.
- E. E. 235. Applications of Tensor Analysis (3).** Three lectures a week, second semester. Prerequisite, E. E. 202. (Not offered in 1949-1950.)
- E. E. 250 Electrical Engineering Research.** Prerequisite, approved application for candidacy to the degree of Master of Science or Doctor of Philosophy in electrical engineering. Six semester hours are required of M.S. degree candidates and a minimum of 12 semester hours are required of Ph.D. candidates.

### **E. Mechanical Engineering**

#### **FOR GRADUATES AND ADVANCED UNDERGRADUATES**

- M. E. 100. Thermodynamics (3).** Two lectures and one laboratory period a week, first and second semesters. Prerequisites, Math. 20, 21; Phys. 20, 21.
- M. E. 101. Heat Transfer (2).** First semester. Two lectures a week. Prerequisites, M. E. 54 and M. E. 100.
- M. E. 102. Heating and Air Conditioning (3).** First semester. Two lectures and one laboratory period a week. Prerequisites, M. E. 100, 101.
- M. E. 103. Refrigeration (3).** Second semester. Two lectures and one laboratory period a week. Prerequisites, M. E. 100, 101.
- M. E. 104, 105. Prime Movers (4, 4).** Two lectures and two laboratory periods a week, first and second semesters. Prerequisites, Mech. 101; M. E. 50, 51.
- M. E. 106, 107. Mechanical Engineering Design (4, 4).** Two lectures and two laboratory periods a week, first and second semesters. Prerequisites, Mech. 50; M. E. 100, 101.
- M. E. 108, 109. Mechanical Laboratory (2, 2).** One lecture and one laboratory period a week, first and second semesters.

#### **FOR GRADUATES**

- M. E. 200, 201. Advanced Dynamics (3, 3).** Three hours a week, first and second semesters. Prerequisites, Mech. 2, 50; Math. 64; M. E. 106, 107; M. E. 108, 109.

- M. E. 202, 203. **Applied Elasticity (3, 3).** Three hours a week, first and second semesters. Prerequisites, Mech. 2, 50; Math. 64; M. E. 106, 107.
- M. E. 204, 205. **Advanced Thermodynamics and Heat Transfer (3, 3).** Three hours a week, first and second semesters. Prerequisites, M. E. 100, 101; M. E. 108, 109; Math. 64.
- M. E. 206, 207. **Advanced Machine Design (3, 3).** One lecture and two laboratory periods a week, first and second semesters. Prerequisites, M. E. 106, 107.
- M. E. 208, 209. **Steam Power Plant Design (3, 3).** One lecture and two laboratory periods a week, first and second semesters. Prerequisites, M. E. 108, 109.
- M. E. 210, 211. **Advanced Fluid Mechanics (3, 3).** Three hours a week, first and second semesters. Prerequisites, M. E. 54; Math. 64.
- M. E. 212, 213. **Advanced Steam Power Laboratory (2, 2).** One lecture and one laboratory period a week, first and second semesters. Prerequisite, concurrent registration in M. E. 204, 205.
- M. E. 214, 215. **Advanced Applied Mechanics Laboratory (2, 2).** One lecture and one laboratory period a week, first and second semesters. Prerequisite, concurrent registration in M. E. 200, 201 and M. E. 202, 203.
- M. E. 216, 217. **Advanced Internal Combustion Engine Design (3, 3).** One lecture and two laboratory periods a week, first and second semesters. Prerequisites, M. E. 106, 107; M. E. 108, 109; and concurrent registration in M. E. 200, 201 and M. E. 204, 205.
- M. E. 218, 219. **Advanced Internal Combustion Engine Laboratory (2, 2).** One lecture and one laboratory period a week, first and second semesters. Prerequisite, concurrent registration in M. E. 216, 217.
- M. E. 220. **Seminar.** Credit in accordance with work outlined by Mechanical Engineering staff.
- M. E. 221. **Research.** Credit in accordance with work outlined by Mechanical Engineering staff.
- M. E. 222. **Advanced Metallography (3).** First or second semester. Two lectures and one laboratory period a week. Prerequisites, Mech. 50; M. E. 533.
- M. E. 223, 224. **Steam and Gas Turbine Design (3, 3).** First and second semesters. Prerequisites, M. E. 100, M. E. 101, M. E. 106-107, and Math. 64.
- M. E. 225, 226. **Advanced Properties of Metals and Alloys (2, 2).** First and second semesters. Two lectures per week. Prerequisites, Mech. 52; M. E. 53, M. E. 106, M. E. 107.

**M. E. 227, 228. Theory of Elasticity (3, 3).** First and second semesters. Three lectures per week. Prerequisites, Mech. 52; M. E. 53, M. E. 106, M. E. 107; Math. 64.

**M. E. 229, 230, 231. Jet Propulsion (2, 2, 2).** First and second semesters. Two lectures per week. Prerequisites, M. E. 101, M. E. 104, M. E. 105.

## ENGLISH LANGUAGE AND LITERATURE

### Special Departmental Requirements

#### MASTER OF ARTS

1. Candidates for the degree of Master of Arts in the Department of English must demonstrate a reading knowledge of a foreign language at the time of admission, or not later than three months before taking the degree. Choice of French or German is recommended.

2. A final written examination will be based in part upon the courses pursued and in part upon general familiarity with English and American literature. The examination will test the candidate's powers of analysis and criticism.

#### DOCTOR OF PHILOSOPHY

1. Candidates for the degree of Doctor of Philosophy in the Department of English must demonstrate a reading knowledge of German and one other approved modern foreign language.

2. Candidates must pass a comprehensive written examination at least three months before they expect to be awarded degrees. This examination will include linguistics (morphology and phonology) and each of the major literary fields.

#### FOR GRADUATES AND ADVANCED UNDERGRADUATES

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|---|---|----------|
| Eng. 101. History of the English Language (3).        | Second semester.  | Harman.  |
| Eng. 102. Old English (3).                            | First semester.   | Ball.    |
| Eng. 103. Beowulf (3).                                | Second semester.  | Ball.    |
| Eng. 104. Chaucer (3).                                | First semester.   | Harman.  |
| Eng. 106. English and Scottish Ballads (3).           | Second semester.  | Cooley.  |
| Eng. 110, 111. Elizabethan and Jacobean Drama (3, 3). | Three hours a week, first and second semesters. (Not offered in 1949-1950.) | Zeeveld. |
| Eng. 112. Poetry of the Renaissance (3).              | First semester.   | Zeeveld. |
| Eng. 113. Prose of the Renaissance (3).               | Second semester.  | Zeeveld. |
| Eng. 115, 116. Shakespeare (3, 3).                    | Three hours a week, first and second semesters.                             | Zeeveld. |

- Eng. 120. English Drama from 1660 to 1800 (3). Second semester. Weber.
- Eng. 121. Milton (3). Second semester. Murphy.
- Eng. 122. Literature of the Seventeenth Century, 1600-1660 (3). First semester. Murphy.
- Eng. 123. Literature of the Seventeenth Century, 1660-1700 (3). Second semester. (Not offered in 1949-1950.) Aldridge.
- Eng. 125, 126. Literature of the Eighteenth Century (3, 3). First and second semesters. Aldridge.
- Eng. 129, 130. Literature of the Romantic Period (3, 3). Three hours a week, first and second semesters. Weber.
- Eng. 134, 135. Literature of the Victorian Period (3, 3). Three hours a week, first and second semesters. Cooley, Mooney.
- Eng. 139, 140. The English Novel (3, 3). Three hours a week, first and second semesters. Aldridge, Mooney.
- Eng. 143. Modern Poetry (3). First semester. Murphy.
- Eng. 144. Modern Drama (3). First semester. Weber.
- Eng. 145. The Modern Novel (3). Second semester. Manning.
- Eng. 148. The Literature of American Democracy (3). First semester. Bode.
- Eng. 150, 151. American Literature to 1900 (3, 3). Three hours a week, first and second semesters. Gravely, Manning.
- Eng. 155, 156. Four Major American Writers (3, 3). Three hours a week throughout the year. Bode, Manning.
- Eng. 170. Creative Writing (2). First semester. Prerequisite, permission of the instructor. R. Fleming.
- Eng. 171. Advanced Creative Writing (2). Second semester. Prerequisite, permission of the instructor. R. Fleming.
- Eng. 172. Playwriting (2). Second semester. Prerequisite, permission of the instructor. R. Fleming.

## FOR GRADUATES

- Eng. 200. Research (3-6). Arranged.
- Eng. 201. Bibliography and Methods (3). First semester. Mooney.
- Eng. 202. Middle English (3). First semester. Harman.
- Eng. 203. Gothic (3). Second semester. (Not offered in 1949-1950.) Harman.
- Eng. 204. Medieval Romances (3). First semester. (Not offered in 1949-1950.) Cooley.

- Eng. 206, 207. Seminar in Renaissance Literature (3, 3). First and second semesters. McManaway.
- Eng. 210. Seminar in Seventeenth Century Literature (3). Second semester. Murphy.
- Eng. 212, 213. Seminar in Eighteenth Century Literature (3, 3). First and second semesters. Aldridge.
- Eng. 214, 215. Seminar in Nineteenth Century Literature (3, 3). First and second semesters. Cooley, Mooney, Weber.
- Eng. 216, 217. Literary Criticism (3, 3). Three hours a week, first and second semesters. (Not offered in 1949-1950.) Cardwell.
- Eng. 225, 226. Seminar in American Literature (3, 3).. Three hours a week, first and second semesters. Bode.
- Eng. 227, 228. Problems in American Literature (3, 3). Cardwell.
- Eng. 230. Studies in American Language (3). (Not offered in 1949-1950.)
- Eng. 257. Problems in Folklore (3). Second semester. (Not offered in 1949-1950.)

## ENTOMOLOGY

## FOR GRADUATES AND ADVANCED UNDERGRADUATES

- Ent. 100. Advanced Apiculture (3). Second semester. One lecture and two three-hour laboratory periods a week. Prerequisite, Ent. 4. Laboratory fee, \$3.00. Abrams.
- Ent. 101. Economic Entomology (3). (Not offered in 1949-1950.) Cory.
- Ent. 103, 104. Insect Pests (3, 3). Two lectures and one three-hour laboratory period a week, first and second semesters. Prerequisite, Ent. 1 or consent of the department. Laboratory fee, \$3.00. Cory.
- Ent. 105. Medical Entomology (3). Two lectures and one three-hour laboratory period a week, first semester. Prerequisite, Ent. 1 or consent of the department. Laboratory fee, \$3.00. Vogt.
- Ent. 106. Advanced Insect Taxonomy (3). First semester. Two three-hour laboratory periods a week. Prerequisite, Ent. 3. Laboratory fee, \$3.00. Vogt.
- Ent. 107. Insecticides (2). Second semester. Prerequisites, Ent. 1 and elementary Organic Chemistry. Shepard.
- Ent. 109. Insect Physiology (2). Two lectures and occasional demonstrations, second semester. Prerequisite, consent of the department. Munson.
- Ent. 110, 111. Special Problems (1, 1). First and second semesters. Prerequisites, to be determined by the department. Cory.
- Ent. 112. Seminar (1). First and second semesters. Cory.

- Ent. 114. Insect Pests of Greenhouses (3).** Second semester. Two lectures and one three-hour laboratory period a week. Prerequisite, Ent. 1 or consent of the department. Laboratory fee, \$3.00. Haviland.

#### FOR GRADUATES

- Ent. 201. Advanced Entomology.** Credit and prerequisites to be determined by the department. First and second semesters. Cory.
- Ent. 202. Research.** Cory.
- Ent. 203. Advanced Insect Morphology (2-4).** Two lectures a week; additional laboratory work and credit by special arrangement with the department. First semester. Snodgrass.
- Ent. 205. Insect Ecology (2).** One lecture and one three-hour laboratory period a week, second semester. Prerequisite, consent of the department. Vogt.

### FOREIGN LANGUAGES AND LITERATURE

#### A. French

##### FOR GRADUATES AND ADVANCED UNDERGRADUATES

- French 100. French Literature of the Sixteenth Century (3).** First semester.
- French 101, 102. French Literature of the Seventeenth Century (3, 3).** Three hours a week, first and second semesters.
- French 103, 104. French Literature of the Eighteenth Century (3, 3).** Three hours a week, first and second semesters. Falls.
- French 105, 106. French Literature of the Nineteenth Century (3, 3).** Three hours a week, first and second semesters.
- French 121, 122. Advanced Composition (3, 3).** Three hours a week, first and second semesters. Falls.
- French 161, 162. French Life and Culture (3, 3).** Three hours a week, first and second semesters. Falls.

#### FOR GRADUATES

The requirements of students will determine which courses will be offered.

- French 201. Research.** Credits determined by work accomplished.
- French 203, 204. George Duhamel, Poet, Dramatist, Novelist (2, 2).** Two hours a week, first and second semesters. Falls.
- French 205, 206. French Literature of the Middle Ages (2, 2).** Two hours a week, first and second semesters.
- French 207, 208. The French Novel in the First Half of the Nineteenth Century (2, 2).** Two hours a week, first and second semesters. Falls.



**French 209, 210.** The French Novel in the Second Half of the Nineteenth Century (2, 2). Two hours a week, first and second semesters. Falls.

**French 211.** Introduction to Old French (3). Second semester.

**French 213, 214.** Seminar (2, 2). Two hours a week, first and second semesters. Required of all graduate majors in French.

**French 215, 216.** Moliere (2, 2). First and second semesters. Quynn.

**French 221, 222.** Reading Course (2, 2). One conference a week, first and second semesters.

## B. German

### FOR GRADUATES AND ADVANCED UNDERGRADUATES

**German 101, 102.** German Literature of the Eighteenth Century (3, 3). Three hours a week, first and second semesters. Prahl.

**German 103, 104.** German Literature of the Nineteenth Century (3, 3). Three hours a week, first and second semesters. Prahl.

**German 105, 106.** Contemporary German Literature (3, 3). Three hours a week, first and second semesters. Prahl.

**German 107, 108.** Goethe's Faust (2, 2). Two hours a week, first and second semesters. Zucker.

Attention is called to Comp. Lit. 106, Romanticism in Germany, and Comp. Lit. 107, The Faust Legend in English and German Literature.

**German 121, 122.** Advanced Composition (3, 3). Three hours a week, first and second semesters. Prerequisites, German 71, 80, or consent of instructor.

**German 161, 162.** German Life and Culture (3, 3). Three hours a week, first and second semesters. Cunz.

### FOR GRADUATES

The requirements of students will determine which courses will be offered.

**German 201.** Research. Credits determined by work accomplished.

**German 202, 203.** The Modern German Drama (3, 3). Three hours a week, first and second semesters. Zucker.

**German 204.** Schiller (3). Prahl.

**German 205.** Goethe's Works Outside of Faust (2). Second semester. Zucker.

**German 206.** The Romantic Movement (3). Prahl.

**German 208.** The Philosophy of Goethe's Faust (3). First semester. Zucker.

- German 210. Seminar (3). Three hours a week, first and second semesters. Required of all graduate majors in German.
- German 220, 221. Reading Course (2, 2). One conference a week, first and second semesters.
- German 230. Introduction to European Linguistics (3).
- German 231. Middle High German (3).

### C. Spanish

#### FOR GRADUATES AND ADVANCED UNDERGRADUATES

- Spanish 101. Epic and Ballad (3). First semester.
- Spanish 104. The Drama of the Golden Age (3). First semester.
- Spanish 105. The Spanish Novel of the Golden Age (3). Second semester.
- Spanish 106. The Poetry of the Golden Age (3). First semester.
- Spanish 107. The Spanish Mystics (3). Second semester.
- Spanish 108. Lope de Vega (3). First semester.
- Spanish 109. Cervantes (3). Second semester.
- Spanish 110. The Poetry of the Nineteenth Century (3). First semester.
- Spanish 111. The Novel of the Nineteenth Century (3). Second semester.
- Spanish 112. The Drama of the Nineteenth Century (3). Second semester.
- Spanish 113. The Novel of the Twentieth Century (3). First semester.
- Spanish 114. The Poetry of the Twentieth Century (3). First semester.
- Spanish 115. Spanish Thought in the Twentieth Century (3). First semester.
- Spanish 116. The Drama of the Twentieth Century (3). Second semester.
- Spanish 121, 122. Advanced Composition (3, 3). Three hours a week, first and second semesters.
- Spanish 151. Latin-American Novel (3). First semester.
- Spanish 152. Latin-American Poetry (3). Second semester.
- Spanish 153. Latin-American Essay (3). First semester.
- Spanish 161, 162. Spanish Life and Culture (3, 3). Three hours a week, first and second semesters.
- Spanish 163, 164. Latin-American Civilization (3, 3). Three hours a week, first and second semesters.

#### FOR GRADUATES

- Spanish 201. Research. Credits determined by work accomplished.

Spanish 202. The Golden Age in Spanish Literature (3). First semester.

Spanish 203, 204. Spanish Poetry (3, 3). Three hours a week, first and second semesters.

Spanish 210. Seminar. Arranged.

Spanish 213. Introduction to Old Spanish (3). Second semester.

Spanish 221, 222. Reading Course. Arranged.

## HISTORY

### Special Departmental Requirements

Eight to ten hours of the total major course requirements of all candidates for this degree must be acquired in the general field of thesis, i. e., either American or European history.

### DOCTOR OF PHILOSOPHY

1. At least thirty hours of the total major course requirements must be acquired in the general field of the thesis, i. e., American history or European history.

2. At least ten hours of the thirty required for a minor in history must be taken at the University of Maryland.

3. Prospective candidates must pass preliminary written and oral examinations covering various fields of their major and minor subjects before admission to candidacy. Consult the head of the department for details.

### FOR GRADUATES AND ADVANCED UNDERGRADUATES

#### A. American History

H. 5, 6 or H. 3, 4, are prerequisites for courses H. 101 to H. 142, inclusive.

H. 101. American Colonial History (3). First semester. Ferguson.

H. 102. The American Revolution (3). Second semester. Ferguson.

H. 105, 106. Social and Economic History of the United States to 1860 (3, 3). Three hours a week, first and second semesters. (Not offered in 1949-1950.) Chatelain.

H. 107. Social and Economic History of the United States, 1860-1900 (3). First semester. Chatelain.

H. 108. Social and Economic History of the United States, Since 1900 (3). Second semester. Chatelain.

H. 115. The Old South (3). First semester. Merrill.

H. 116. The Civil War and Reconstruction (3). Second semester. Merrill.

H. 118, 119. Recent American History (3, 3). First and second semesters. Merrill.

- H. 121, 122. History of the American Frontier (3, 3). Three hours a week, first and second semesters. Gewehr.
- H. 127, 128. Diplomatic History of the United States (3, 3). Three hours a week, first and second semesters. Wellborn.
- H. 129. The United States and World Affairs (3). First semester. Wellborn.
- H. 130. Territorial Dependencies of the United States (3). Wellborn.
- H. 133, 134. The History of American Ideas (3, 3). Three hours a week, first and second semesters. Johnson.
- H. 135, 136. Constitutional History of the United States (3, 3). Three hours a week, first and second semesters. Gewehr.
- H. 141, 142. History of Maryland (3, 3). Three hours a week, first and second semesters. (Not offered in 1949-1950.) Chatelain.
- H. 145, 146. Latin-American History (3, 3). Three hours a week, first and second semesters. Crosman.
- H. 147. History of Mexico (3). First semester. Crosman.

#### B. European History

- H. 151. History of the Ancient Orient and Greece (3). First semester. Jashemski.
- H. 153. History of Rome (3). Second semester. Jashemski.
- H. 155. Medieval Civilization (3). First semester. Prerequisites, H. 1, 2, or H. 3, 4. Jashemski.
- H. 161. The Renaissance and Reformation (3). Second semester. Prerequisites, H. 1, 2, or H. 3, 4. Jashemski.
- H. 166. Revolutionary and Napoleonic Europe (3). Second semester. Prerequisites, H. 1, 2, or H. 3, 4. Bauer.
- H. 171, 172. Europe in the Nineteenth Century, 1815-1919 (3, 3). Three hours a week, first and second semesters. Prerequisites, H. 1, 2, or H. 3, 4. Bauer.
- H. 175, 176. Europe in the World Setting of the Twentieth Century (3, 3). Three hours a week, first and second semesters. Prerequisites, H. 1, 2, or H. 3, 4. Prange.
- H. 179, 180. Diplomatic History of Europe Since 1871 (3, 3). Three hours a week, first and second semesters. Prerequisites, H. 1, 2, or H. 3, 4. Prange.
- H. 181, 182. History of Central Europe (3, 3). Three hours a week, first and second semesters. Prerequisites, H. 1, 2, or H. 3, 4. Prange.

- H. 185, 186. History of the British Empire (3, 3). Three hours a week, first and second semesters. Prerequisites, H. 1, 2, or H. 3, 4, or equivalent. Gordon.
- H. 187. History of Canada (3). First semester. Prerequisites, H. 1, 2, or H. 3, 4. Gordon.
- H. 191. History of Russia (3). First semester. Prerequisites, H. 1, 2, or H. 3, 4. Bauer.
- H. 192. Foreign Policy of the USSR (3). Second semester. Prerequisites, H. 1, 2 and H. 191. Bauer.
- H. 193. History of the Near East (3). First semester. Prerequisites, H. 1, 2, or equivalent. (Not offered in 1949-1950.) Gewehr.
- H. 195. The Far East (3). Second semester. (Not offered in 1949-1950.) Gewehr.
- H. 199. Proseminar in Historical Writing (3). Second semester. Staff.

## FOR GRADUATES

- H. 200. Research (3-6). Credit apportioned to amount of research. First and second semesters. Staff.
- H. 201. Seminar in American History (3). First and second semesters. Chatelain.
- H. 205, 206. Topics in American Economic and Social History (3, 3). Arranged. First and second semesters. Chatelain.
- H. 208. Topics in Recent American History (3). First and second semesters. Merrill.
- H. 211. The Colonial Period in American History (3). Arranged. First semester. Ferguson.
- H. 212. Period of the American Revolution (3). Arranged. Second semester. Ferguson.
- H. 215. The Old South (3). Merrill.
- H. 216. The American Civil War (3). Merrill.
- H. 221, 222. History of the West (3, 3). Gewehr.
- H. 233, 234. Topics in American Intellectual History (3, 3). Johnson.
- H. 235. Problems in American Constitutional History (3). First and second semesters. Gewehr.
- H. 250. Seminar in European History (3). First and second semesters. Bauer.
- H. 255. Medieval Culture and Society (3). Jashemski.
- H. 281. Topics in the History of Central Europe (3). Prange.

- H. 285, 286. Topics in the History of Modern England and Great Britain (3, 3). Three hours a week, first and second semesters. Gordon.
- H. 287. Historiography (3). Sparks.

### HOME ECONOMICS

#### A. Textiles and Clothing

##### FOR GRADUATES AND ADVANCED UNDERGRADUATES

Laboratory fees in Textiles and Clothing for graduate students are \$3.00 per course per semester.

- Tex. 101. Problems in Textiles (3). One lecture and three laboratory periods a week, first semester. Prerequisites, Tex. 100; Organic Chemistry. Akin.
- Tex. 102. Textile Testing (3). Three laboratory periods a week, first semester. Prerequisite, Tex. 100.
- Tex. 103. Textile Microscopy (3). Three laboratory periods a week, second semester. Prerequisite, Tex. 101.
- Tex. 105. Consumer Problems in Textiles (3). Two lectures and one laboratory period a week, first and second semesters. Prerequisite, Tex. 1, or equivalent. Akin.
- Tex. 106. Household Textiles (3). Three laboratory periods a week, first semester. Prerequisite, Tex. 1.
- Tex. 108. Decorative Fabrics (2). One lecture and one laboratory period a week, first semester.
- Clo. 120. Draping (3). Three laboratory periods a week, first and second semesters. Prerequisite, Clo. 22. Wilbur.
- Clo. 121. Pattern Designs (2). Two laboratory periods a week, second semester. Prerequisite, Clo. 22. Wilbur.
- Clo. 122, 125. Tailoring (2, 2). Two laboratory periods a week. Prerequisite, Clo. 22. Mitchell.
- Clo. 123. Children's Clothing (2). One lecture and one laboratory period a week, first and second semesters. Prerequisite, Clo. 20A or 20B, or equivalent. Wilbur.
- Clo. 124. Projects and Readings in Textiles and Clothing (2). Second semester.
- Clo. 126. Fundamentals of Fashion (2-3). First semester. Prerequisite, senior standing.
- Clo. 127. Apparel Design (3). Second semester. Prerequisites, Clo. 120; senior standing. Wilbur.

**Clo. 128. Home Furnishings (3).** Three laboratory periods a week, second semester. Prerequisites, Tex. 1, Clo. 20A or B, or consent of instructor.

#### FOR GRADUATES

**Tex. 200. Special Studies in Textiles (2-4).**

**Clo. 220. Special Studies in Clothing (2-4).** First and second semesters. Mitchell.

**Tex. and Clo. 230. Seminar (1).** First and second semesters.

**Tex. and Clo. 231. Research.** First and second semesters.

**Tex. and Clo. 232. Economics of Clothing and Textiles (3).** Second semester.

#### B. Practical Art and Crafts

##### FOR GRADUATES AND ADVANCED UNDERGRADUATES

Laboratory fees in Practical Arts for graduate students are  
\$3.00 per course per semester.

**Pr. Art 100, 101. Mural Design (2, 2).** Two laboratory periods a week, first semester. Prerequisites, Pr. Art 1, 2, 3, 21, and consent of the instructor. Cuneo.

**Pr. Art 102, 103. Advanced Mural Design (2, 2).** Two laboratory periods a week, first semester. Prerequisites, Pr. Art 1, 2, 3, 21, 100, 101. Cuneo.

**Pr. Art 120, 121. Costume Illustration (2, 2).** Two laboratory periods a week, first and second semesters. Prerequisites, Pr. Art 1, 20, 21, 22, and consent of instructor. Cassels.

**Pr. Art 124, 125. Individual Problems in Costume (2, 2).** Two laboratory periods a week, first and second semesters. Prerequisites, Pr. Art 1, 20, 120, 121, and consent of instructor. Cassels.

**Pr. Art 132. Advertising Layout (2).** Two laboratory periods a week, first and second semesters. Prerequisites, Pr. Art 1, 20, 21, 22, 30, and consent of instructor. Cuneo.

**Pr. Art 134, 135. Individual Problems in Advertising (2, 2).** Two laboratory periods a week, second semester. Prerequisite, Pr. Art 1, 20, 30, 120, 132, or equivalent, and consent of instructor. Cuneo.

**Pr. Art 136. Merchandise Display (2).** Two laboratory periods a week, first and second semesters. Prerequisites, Pr. Art 1, 20, 30; 120, 132 to precede or parallel. Cassels.

**Pr. Art 137. Advanced Merchandise Display (2).** Two laboratory periods a week, first and second semesters. Prerequisites, Pr. Art 1, 20, 30, 120, 132, 136, and consent of instructor. Cassels.

- Pr. Art 138, 139. **Advanced Photography (2, 2).** Three laboratory periods a week, first and second semesters. Prerequisites, Pr. Art 1, 38, 39. Cuneo.
- Pr. Art 140, 141. **Interior Design (1, 3).** One laboratory period a week, first semester; three laboratory periods a week, second semester. Prerequisites, Pr. Art 1 and Pr. Art 2. Brown.
- Pr. Art 142, 143. **Advanced Interior Design (2, 2).** Two laboratory periods a week, first and second semesters. Prerequisites, Pr. Art 1, 140, 141, or equivalent. Brown.
- Pr. Art 144, 145. **Individual Problems in Interior Design (2, 2).** Two laboratory periods a week, first and second semesters. Prerequisites, Pr. Art 1, 140, 141, 142, 143, and consent of instructor. Brown.
- Cr. 120, 121. **Advanced Ceramics (2, 2).** Three laboratory periods a week, first and second semesters. Prerequisites, Cr. 20, 21. Lawson.
- Cr. 124, 125. **Individual Problems in Ceramics (2, 2).** Two laboratory periods a week, first and second semesters. Prerequisites, Cr. 20, 21, 120, 121, and consent of instructor. Lawson.
- Cr. 130, 131. **Advanced Metalry (2, 2).** Three laboratory periods a week, first and second semesters. Prerequisites, Cr. 30, 31. Lawson.
- Cr. 134, 135. **Individual Problems in Metalry (2, 2).** Three laboratory periods a week, first and second semesters. Prerequisites, Cr. 30, 31, 130, 131, and consent of instructor. Lawson.
- Cr. 140, 141. **Advanced Weaving (2, 2).** Three laboratory periods a week, first and second semesters. Prerequisites, Cr. 40, 41. Lawson.
- Cr. 144, 145. **Individual Problems in Weaving (2, 2).** Three laboratory periods a week, first and second semesters. Prerequisites, Cr. 40, 41, 140, 141, and consent of instructor. Lawson.
- Cr. 198. **Crafts in Therapy (2).** Second semester. Prerequisites, three courses in various crafts or art construction and consent of instructor. Curtiss.

### C. Home and Institution Management

#### FOR GRADUATES AND ADVANCED UNDERGRADUATES

- Home Mgt. 150, 151. **Management of Home (3, 3).** Three hours a week, first and second semesters. Crow and Burke.
- Home Mgt. 152. **Experience in Management of Home (3).** First and second semesters. Prerequisites, Home Mgt. 150, 151. Laboratory fee for graduate students, \$7.00. Crow and Burke.
- Inst. Mgt. 160. **Institution Organization and Management (3).** Two lectures and one laboratory period a week, first semester. Prerequisites, Foods 2, 3; Nut. 110; Home Mgt. 150, 151.



- Inst. Mgt. 161.** Institution Purchasing and Accounting (3). Two lectures and one laboratory period a week, second semester. Prerequisite, Inst. Mgt. 160.
- Inst. Mgt. 162.** Institution Foods (3). One lecture and two laboratory periods a week, second semester. Prerequisites, Inst. Mgt. 160, 161.
- Inst. Mgt. 163.** Practice in Institution Management (3). Arranged. Three laboratory periods a week. Prerequisites, Inst. Mgt. 160, 161.
- Inst. Mgt. 164.** Advanced Institution Management (2). One lecture and one laboratory period a week, second semester. Prerequisites, Inst. Mgt. 160, 161, 162.
- Inst. Mgt. 165.** School Lunch (3). Two lectures and one laboratory period a week, second semester and summer session. Prerequisites, Foods 2, 3; Nut. 110, or equivalent.
- Inst. Mgt. 181.** Purchasing and Accounting for Housekeeping Administration (3). Second semester. Prerequisite, Inst. Mgt. 160.
- Inst. Mgt. 182.** Housekeeping Management (3). First semester. Prerequisite, Inst. Mgt. 160.
- Inst. Mgt. 183.** Problems in Housekeeping Management (3). Second semester. Prerequisites, Inst. Mgt. 160 and Inst. Mgt. 182.

#### D. Foods and Nutrition

##### FOR GRADUATES AND ADVANCED UNDERGRADUATES

Laboratory fees in Foods, for graduate students, are \$7.00 per course per semester.

- Foods 100.** Food Economics (2). One lecture and one laboratory period a week, first and second semesters. Prerequisite, Foods 1 or 2, 3.  
LeGrand.
- Foods 101.** Meal Service (2). Two laboratory periods a week, first and second semesters. Prerequisite, Foods 1 or 2, 3. Cornell and Spencer.
- Foods 102.** Experimental Foods (3). One lecture and two laboratory periods a week, first semester. Prerequisites, Foods 2, 3; Organic Chemistry, Chem. 31, 32, 33, 34.  
Peers.
- Foods 103.** Demonstrations (2). Two laboratory periods a week, first and second semesters. Prerequisites, Clo. 20; Foods 1 or 2, 3; Pr. Art 20; Tex. 1.  
Neylan.
- Foods 104.** Advanced Foods (2). Two laboratory periods a week, second semester. Prerequisite, Foods 1 or 2, 3.  
Peers.
- Foods 105.** Foods of Other Countries (3). One lecture and two laboratory periods a week, second semester. Prerequisite, Foods 1 or 2, 3, or equivalent.  
Neylan.

- Nut. 110. Nutrition (3). First semester. Prerequisites, Foods 2, 3; Organic Chemistry, Chem. 31, 32, 33, 34. LeGrand.
- Nut. 111. Child Nutrition (2). One lecture and one laboratory period a week, second semester. Prerequisite, Foods 1 or 2, 3; Nut. 110 or 10. Spencer.
- Nut. 112. Dietetics (3). One lecture and two laboratory periods a week, first semester. Prerequisite, Nut. 110. LeGrand.
- Nut. 113. Diet in Disease (2). Two periods a week, first semester. Prerequisite, Nut. 110. Hagel.

## FOR GRADUATES

- Foods 200. Advanced Experimental Foods (3-5). Second semester.
- Nut. 210. Readings in Nutrition (3). First semester.
- Nut. 211. Problems in Nutrition (3-5). Second semester.
- Nut. 212. Nutrition for Community Service (3). First semester.
- Foods and Nut. 220. Seminar (1). First and second semesters.
- Foods and Nut. 221. Research. First and second semesters.

## E. Home Economics Extension

## FOR GRADUATES AND ADVANCED UNDERGRADUATES

- H. E. Ext. 100. Methods in Home Economics Extension (3). Second semester

## HORTICULTURE

## FOR GRADUATES AND ADVANCED UNDERGRADUATES

- Hort. 101, 102. Technology of Fruits (2, 2). Two hours a week, first and second semesters. Prerequisite, Bot. 101. Haut.
- Hort. 103, 104. Technology of Vegetables (2, 2). Two hours a week, first and second semesters. Prerequisite, Bot. 101.
- Hort. 105. Technology of Ornamentals (2). Two hours a week, first or second semester. Prerequisite, Bot. 101. Link.
- Hort. 106. World Fruits and Nuts (2). Second semester. Haut.
- Hort. 107, 108. Plant Materials (3, 3). Two lectures and one laboratory period a week, first and second semesters. Prerequisite, Bot. 1. Cornell.
- Hort. 114. Systematic Pomology (3). Two lectures and one laboratory period a week, first semester. Given in alternate years. Haut.
- Hort. 116. Systematic Olericulture (3). Two lectures and one laboratory period a week, first semester. Given in alternate years. Walls.

**Hort. 126. Nutritional Analyses of Processed Crops (3).** One lecture and two laboratory periods a week. Prerequisites, Chem. 33 and 34, Bot. 101.

**Hort. 159. Nursery Management (3).** Second semester. Two lectures and one laboratory period a week. Prerequisites or concurrently, Hort. 62; 107; 108.

#### FOR GRADUATES

**Hort. 201, 202. Experimental Pomology (3, 3).** Three hours a week, first and second semesters. Prerequisite, Bot. 101. Schrader.

**Hort. 203, 204. Experimental Olericulture (2, 2).** Two hours a week, first and second semesters. Prerequisite, Bot. 101.

**Hort. 205. Experimental Pomology (3).** Second semester. This course is a continuation of Hort. 201, 202. Schrader.

**Hort. 206. Horticulture Cyto-Genetics (3).** Second semester. Prerequisites, Zool. 104, Bot. 101, Bot. 201, or equivalents. A course dealing with the field of cyto-genetics in relation to horticulture. ———.

**Hort. 207. Methods of Horticultural Research (3).** Second semester. One lecture and one four-hour laboratory period a week. A critical study of research methods which are or may be used in horticulture. Scott and Staff.

**Hort. 208. Advanced Horticultural Research (2 to 12).** First and second semesters. Credit granted according to work done. Staff.

**Hort. 209. Advanced Seminar (1).** First and second semesters. Five credit hours for five semesters can be obtained. Oral reports with illustrative material are required on special topics or recent research publications in horticulture. Haut and Staff.

#### JOURNALISM

##### FOR GRADUATES AND ADVANCED UNDERGRADUATES

**Journ. 160. News Editing, I (3).** Two lectures and one laboratory period a week, first semester. Wood.

**Journ. 161. News Editing, II (3).** Two lectures and one laboratory period a week, second semester. Wood.

**Journ. 164. Magazine Writing (3).** Two lectures and one laboratory period a week, first semester. Bryan.

**Journ. 165. Feature Writing (3).** Two lectures and one laboratory period a week, second semester. Bryan.

**Journ. 174. Editorial Writing (3).** Two lectures and one laboratory period a week, first semester. Estabrook.

**Journ. 175. Reporting of Public Affairs (3).** Two lectures and one laboratory period a week, second semester. Prerequisite, Journ. 11. Wood.

**Journ. 176. Evaluation of Current Journalistic Practice (3).** Two lectures and one laboratory period a week, second semester. Bryan.

## MATHEMATICS

### Special Departmental Requirements

#### MASTER OF ARTS

Before a candidate will be recommended for admission to candidacy the candidate will be required to:

1. Demonstrate a reading knowledge of a foreign language of scientific importance.

2. Pass a preliminary examination. The examination covers the candidate's mastery of undergraduate and graduate studies in both major and minor fields. Ordinarily only one re-examination, to be held not before a semester has lapsed, may be given.

#### DOCTOR OF PHILOSOPHY

Before submitting himself for the preliminary examination required for admission to candidacy the student is expected to have acquired a background of mathematical knowledge represented by the following group of graduate studies: Analysis, four semesters; Algebra, two semesters; Geometry or Topology, two semesters; Applied Mathematics or Physics, two semesters.

#### A. Algebra

##### FOR GRADUATES AND ADVANCED UNDERGRADUATES

**Math. 100, 101. Higher Algebra (3, 3).** (Not offered 1949-1950.) Prerequisites, Math. 20, 21, or equivalent. Good.

**Math. 102. Theory of Equations (3).** First semester. Prerequisites, Math. 20, 21, or equivalent. Good.

**Math. 103. Introduction to Modern Algebra (3).** Prerequisites, Math. 20, 21, or equivalent. (Not offered 1949-1950.) Good.

##### FOR GRADUATES

**Math. 200, 201. Modern Algebra (3, 3).** (Not offered 1949-1950.) Prerequisite, Math. 103, or consent of instructor. Good.

**Math. 202. Matrix Theory (3).** Second semester. Prerequisite, Math. 103, or consent of instructor. Good.

**Math. 204, 205. Topological Groups (3, 3).** First and second semesters. Prerequisite, consent of instructors. Good, Hall.

**Math. 271. Selected Topics in Algebra (3).** Arranged.

**B. Analysis****FOR GRADUATES AND ADVANCED UNDERGRADUATES**

- Math. 110, 111.** Advanced Calculus (3, 3). First and second semesters. Prerequisites, Math. 20, 21, or equivalent.
- Math. 114, 115.** Differential Equations (3, 3). Math. 114 will be given second semester. Math. 115 not offered 1949-150. Prerequisite, Math. 20, 21, or equivalent. Leutert.
- Math. 116.** Introduction to Complex Variable Theory (3). (Not offered 1949-1950.) Prerequisites, Math. 20, 21, or equivalent. Open to students of engineering and the physical sciences. Graduate students to mathematics should enroll in Math. 210, 211.
- Math. 117.** Fourier Series (3). (Not offered 1949-1950.) Prerequisite, Math. 114, or equivalent.

**FOR GRADUATES**

- Math. 210, 211.** Functions of a Complex Variable (3, 3). First and second semesters. Prerequisites, advanced calculus.
- Math. 213, 214.** Functions of a Real Variable (3, 3). (Not offered 1949-1950.) Prerequisite, advanced calculus.
- Math. 215, 216.** Analysis (3, 3). First and second semesters. Prerequisite, advanced calculus, and a course in complex variable theory. Truesdell.
- Math. 272.** Selected Topics in Analysis. To be arranged.. Weinstein.

**C. Geometry and Topology****FOR GRADUATES AND ADVANCED UNDERGRADUATES**

- Math. 122, 123.** Elementary Topology (3, 3). First and second semesters. Prerequisites, Math. 20, 21, or equivalent. Hall.
- Math. 124, 125.** Introduction to Projective Geometry (3, 3). (Not offered 1949-1950.) Prerequisites, Math. 20, 21, or equivalent. Jackson.
- Math. 126.** Introduction to Differential Geometry (3). (Not offered 1949-1950). Prerequisite, Math. 20, 21, or equivalent. Vanderslice.
- Math. 128, 129.** Higher Geometry (3, 3). First and second semesters. Prerequisite, two years of college mathematics. Open to students in the College of Education.

**FOR GRADUATES**

- Math. 220, 221.** Differential Geometry (3, 3). (Not offered 1949-1950.) Prerequisite, Math. 126, or equivalent. Jackson.
- Math. 223, 224.** Combinatorial Topology (3, 3). (Not offered 1949-1950.)

- Math. 225, 226. Set-theoretic Topology (3, 3). First and second semesters. Prerequisite, advanced calculus. (Not offered 1949-1950.) Hall.
- Math. 227. Tensor Analysis (3). Second semester. Prerequisites. Math. 110, 111, 134, or equivalent.
- Math. 273. Selected Topics in Geometry and Topology (3). Arranged.

#### D. Applied Mathematics

##### FOR GRADUATES AND ADVANCED UNDERGRADUATES

- Math. 130, 131. Analytic Mechanics (3, 3). Prerequisites, Math. 20, 21, or equivalent. (Not offered 1949-1950.)
- Math. 132, 133. Advanced Mathematics for Engineers and Physicists (3, 3). First and second semesters. Prerequisites, Math. 20, 21, or equivalent. Vanderslice.
- Math. 134. Vector Analysis (3). First and second semester. Prerequisites, Math. 20, 21, or equivalent. Vanderslice.
- Math. 135. Numerical Analysis (3). (Not offered 1949-1950.) Prerequisite, Math. 114, or equivalent.
- Math. 139. Operational Calculus (3). (Not offered 1949-1950.) Prerequisite, Math. 64, or equivalent. Intended for students of engineering and physics.

##### FOR GRADUATES

- Math. 230, 231. Applied Mathematics (3, 3). First and second semesters. Prerequisite, advanced calculus and differential equations. Martin.
- Math. 232, 233. Partial Differential Equations of Mathematical Physics (3, 3). First and second semesters. Prerequisites, advanced calculus and differential equations. Martin.
- Math. 234. Potential Theory (3). Prerequisites, Math. 110, 111, or equivalent. (Not offered 1949-1950.) Weinstein.
- Math. 235. Advanced Numerical Analysis (3). Second semester. Prerequisites, Math. 115, 135, or equivalent. (Not offered 1949-1950.)
- Math. 236. Mathematical Theory of Hydrodynamics (3). (Not offered 1949-1950.) Prerequisite, a course in complex variable theory. Weinstein.
- Math. 237. Mathematical Theory of Elasticity (3). (Not offered 1949-1950.) Prerequisites, Math. 110, 111, or equivalent. Weinstein.
- Math. 238. Mathematical Theory of Continuous Media (3). (Not offered 1949-1950.) Prerequisites, vector or tensor analysis and consent of instructor. Truesdell.
- Math. 274. Selected Topics in Applied Mathematics (2). Arranged.

**E. Statistics**

**Math. 150, 151. Probability (3, 3).** (Not offered 1949-1950.) Prerequisite, differential and integral calculus.

**Math. 152, 153. Mathematical Statistics (2, 2).** First and second semesters. Prerequisite, differential and integral calculus.

**Math. 154, 155. Applications of Statistics (3, 3).** First and second semesters. Two lectures and one two-hour laboratory period per week. Prerequisites, Math. 20, 21, or equivalent.

**Math. 156. Biological Statistics (2).** Second semester. Prerequisite, consent of instructor.

**F. Colloquium and Research****FOR GRADUATES**

**Math. 290. Colloquium.** First and second semesters.

**Math. 300. Research.** Arranged.

**PHILOSOPHY****FOR GRADUATES AND ADVANCED UNDERGRADUATES**

**Phil. 101. Ancient Philosophy (3).** First semester.

**Phil. 102. Modern Philosophy (3).** Second semester. Prerequisite, Phil. 101.

**Phil. 111. Medieval Philosophy (3).** First semester. Prerequisite, Phil. 101. (Not offered in 1949-1950; to be offered in 1950-1951.)

**Phil. 112. Recent and Contemporary Philosophy (3).** Second semester. Prerequisite, Phil. 101.

**Phil. 121. American Philosophy (3).** First semester.

**Phil. 151. Ethics (3).** First semester. Prerequisite (after June, 1950), Phil. 2 or one year of philosophy. Baylis.

**Phil. 191. Topical Investigations (3).** Each semester. Staff.

**FOR GRADUATES**

Graduate instruction in the Department of Philosophy is carried on mainly by independent investigation of special topics under individual supervision. Any of the courses listed below may be elected more than once. Course selections require the approval of the department chairman.

**Phil. 201. Research in Philosophy (3).** Each semester. Staff.

**Phil. 203. Selected Problems in Philosophy (3).** Each semester. Staff.

**Phil. 205. Seminar in the History of Philosophy (3).** First semester. Staff.

- Phil. 206. Seminar in the Problems of Philosophy (3). Second semester.  
Staff.

### PHYSICAL EDUCATION, HEALTH AND RECREATION

#### FOR GRADUATES AND ADVANCED UNDERGRADUATES

- P. E. 100. Kinesiology (3). First and second semesters.
- P. E. 101, 103. Organization and Officiating in Intramurals (2, 2). First and second semesters.
- P. E. 112. History of Dance (3). First semester. Prerequisite, P. E. 52, 54, 56, 58.
- P. E. 113, 115. Methods and Materials for Secondary Schools, I (2, 2). Two lectures and two laboratories a week.
- P. E. 114, 116. Methods and Materials for Secondary Schools, II (2, 2). Two lectures and two laboratory hours a week.
- P. E. 140. Therapeutics (3). First and second semesters. Prerequisite, P. E. 100.
- P. E. 150. History and Philosophy of Physical Education (2). Second semester.
- P. E. 170. Principles of Physical Education (3). First and second semesters.
- P. E. 180. Measurements in Health and Physical Education (3). First and second semesters.
- P. E. 181. Training and Conditioning (3). Second semester.
- P. E. 190. Health Administration and and Supervision of Physical Education and Recreation (3). First and second semesters.

#### FOR GRADUATES

- P. E. 200. Departmental Seminar (1-2). First and second semesters and summer.  
Gloss and Deach.
- P. E. 201. Foundations in Physical Education, Health and Recreation (3). First and second semesters.  
Deach and Field.
- P. E. 203. Supervisory Techniques in Physical Education, Health and Recreation (3). First and second semesters and alternate summers.  
Hutto.
- P. E. 205. Administration of Athletics (2). First and second semesters and summer.  
Burnett.
- P. E. 210. Comparative Problems in Physical Education (2). First and second semesters.  
Gloss.
- P. E. 230. Contemporary Physical Education (3). First and second semesters and alternate summers.  
Gloss.



P. E. 250. Survey in the Area of Physical Education, Health and Recreation (6). First and second semesters and summers. Gloss.

P. E. 260. Research (1-6). First and second semesters and summers. Gloss and Burnett.

#### A. Health Education

##### FOR GRADUATES AND ADVANCED UNDERGRADUATES

Hea. 110. Health Service and Supervision (3). First and second semesters.

Hea. 112. Home Nursing (2). First semester.

Hea. 114. Health Education for Elementary Schools (2). First and second semesters.

Hea. 120. Teaching Health (2). First and second semesters. Prerequisite, Hea. 40, or equivalent.

Hea. 130. Organization and Administration of Health Education (3). First and second semesters. Elective.

##### FOR GRADUATES

Hea. 220. Principles and Practices of Health Education (3). First and second semesters and alternate summers. Burnett.

Hea. 240. Advancements in Modern Health (3). First and second semesters and summer. Burnett.

#### B. Recreation Education

##### FOR GRADUATES AND ADVANCED UNDERGRADUATES

Rec. 100. Co-Recreational Games and Programs (2). First and second semesters.

Rec. 102. Recreational Games for the Elementary School (2). First semester.

Rec. 110. Nature Lore (1-3). Second semester. (An evening course and six Saturdays and Sundays during April and May given in Washington.)

Rec. 120. Camp Administration and Leadership (3). First and second semesters.

Rec. 130. Principles and Practice of Recreation (3). First and second semesters.

Rec. 140. Observation and Service in Recreation (5). First and second semesters.

Rec. 170. Organization and Administration of Recreation (3). First and second semesters.

##### FOR GRADUATES

Rec. 210. Philosophy of Recreation (2). First and second semesters and alternate summers. Gloss.

- Rec. 220. Contemporary Recreation (3).** First and second semesters and alternate summers. Gloss.

### PHYSICS

#### FOR GRADUATES AND ADVANCED UNDERGRADUATES

- Phys. 100. Advanced Experiments.** Three hours' laboratory work for each credit hour. One or more credits may be taken concurrently. Prerequisites, Phys. 52 or 54 and four credits in Phys. 60. Laboratory fee, \$6.00 per credit hour. Staff.
- Phys. 101. Laboratory Arts (1).** Four hours laboratory a week, second semester. Prerequisite, two credits Phys. 100. Laboratory fee, \$6.00. Staff.
- Phys. 102. Optics (3).** Three lectures a week, first semester. Prerequisites, Phys. 11 or 21; Math. 21. Cooper.
- Phys. 104, 105. Electricity and Magnetism (3, 3).** Three lectures a week, first and second semesters. Prerequisites, Phys. 11 or 21; Math. 21. Cooper.
- Phys. 106, 107. Theoretical Mechanics (3, 3).** Two lectures a week, first and second semesters. Prerequisites, Phys. 11 or 21; Math. 21. Morgan.
- Phys. 112, 113. Modern Physics (2, 2).** Two lectures a week. Prerequisite, advanced standing in physics and mathematics. Cooper.
- Phys. 116, 117. Fundamental Hydrodynamics (3, 3).** Three lectures a week, first and second semesters. Prerequisites, Phys. 107 and Math. 21. Kennard.
- Phys. 120, 121. Experimental Nuclear Physics (3, 3).** Two lectures and one laboratory period a week, first and second semesters. Prerequisites, Phys. 113 and two credits in Phys. 100. Johnson.
- Phys. 126. Kinetic Theory of Gases (3).** Prerequisites, Phys. 107 and Math. 21, or equivalent. Kennard.

#### FOR GRADUATES

Of the following courses, 200, 201, 212 and 213 are given every year; all others will be given according to the demand.

- Phys. 200, 201. Introduction to Theoretical Physics (5, 5).** Five lectures a week, first and second semesters. Myers.
- Phys. 202, 203. Advanced Dynamics (2, 2).** Two lectures a week. Prerequisite, Phys. 200.
- Phys. 204. Electrodynamics (4).** Four lectures a week. Prerequisite, Phys. 201. Iskraut.
- Phys. 206. Physical Optics (3).** Prerequisite, Phys. 201. Myers.

- Phys. 208, 209. Thermodynamics (2, 2). Prerequisite, Phys. 201 or equivalent.  
Cooper.
- Phys. 210, 211. Statistical Mechanics and the Kinetic Theory of Gases (2, 2). Two lectures a week. Prerequisites, Phys. 112 and 201.  
McMillen.
- Phys. 212, 213. Introduction to Quantum Mechanics (2, 2). Two lectures a week, first and second semesters. Prerequisites, Phys. 201.  
Brickwedde.
- Phys. 214, 215. Theory of Atomic Structure and Spectral Lines (2, 2). Two lectures a week. Prerequisite, Phys. 213.  
McMillen.
- Phys. 216, 217. Molecular Structure (2, 2). Two lectures a week. Prerequisite, Phys. 213.  
Brickwedde.
- Phys. 218, 219. X-Rays and Crystal Structure (3, 3). Three lectures a week, first and second semesters.  
Morgan.
- Phys. 220. Application of X-Ray and Electron Diffraction Methods (2). Two laboratory periods a week.  
Morgan.
- Phys. 222, 223. Boundary-Value Problems of Theoretical Physics (2, 2). Prerequisite, Phys. 201.
- Phys. 224, 225. Supersonic Aerodynamics and Compressible Flow (2, 2). Prerequisite, Phys. 201.  
McMillen.
- Phys. 226, 227. Theoretical Hydrodynamics (3, 3). Prerequisite, elementary hydrodynamics.  
Kennard.
- Phys. 228, 229. The Electron (2, 2). Prerequisites, Phys. 204 and Phys. 213.  
Johnson.
- Phys. 230. Seminar (1). First and second semesters.
- Phys. 232, 233. Hydromechanics Seminar (1, 1).  
Kennard.
- Phys. 234, 235. Nuclear Physics (2, 2). Prerequisite, Phys. 213. Johnson.
- Phys. 236. Theory of Relativity (3). Prerequisite, Phys. 200. Iskraut.
- Phys. 238. Quantum Theory—selected topics (3). Prerequisite, Phys. 236.  
Iskraut.
- Phys. 240, 241. Theory of Sound and Vibrations (2, 2). Prerequisite, Phys. 201.  
McMillen.
- Phys. 242, 243. Theory of Solids (2, 2). Two lectures a week, first and second semesters. Prerequisite, Phys. 213.  
Myers.
- Phys. 250. Research. Credit according to work done. Laboratory fee, \$6.00 per credit hour.

## POULTRY HUSBANDRY

## FOR GRADUATES AND ADVANCED UNDERGRADUATES

- P. H. 104. Poultry Marketing Problems (3). Two lectures and one laboratory period a week, first semester. Gwin.
- P. H. 105. Egg Marketing Problems (3). Two lectures and one laboratory period a week, second semester. Gwin.
- P. H. 107. Poultry Industrial and Economic Problems (2). First semester. Staff.
- P. H. 108. Special Poultry Problems (1-2). Assigned problems, first and second semesters. Staff.
- Poultry Hygiene. See V. S. 107.
- Avian Anatomy. See V. S. 108.
- Preservation of Poultry Products. See F. Tech. 108.

## FOR GRADUATES

- P. H. 201. Advanced Poultry Genetics (3). First semester. Prerequisite, P. H. 100, or equivalent. Jull.
- P. H. 202. Advanced Poultry Nutrition (3). Two lectures and one laboratory period a week, second semester. Prerequisite, P. H. 101, or equivalent.
- P. H. 203. Physiology of Reproduction of Poultry (3). Two lectures and one laboratory period a week, first semester. Prerequisite, P. H. 102, or equivalent. Shaffner.
- P. H. 204. Poultry Seminar (1). First and second semesters. Staff.
- P. H. 205. Poultry Literature (1-4). First and second semesters. Staff.
- P. H. 206. Poultry Research. Credit in accordance with work done. Staff.
- P. H. 207. Poultry Research Techniques (2). One lecture and one laboratory period a week, first semester. Staff.

## PSYCHOLOGY

## FOR GRADUATES AND ADVANCED UNDERGRADUATES

Graduate credit will be assigned only for students certified by the Department of Psychology as qualified for graduate standing.

- Psych. 106. Statistical Methods in Psychology (3). First and second semesters. Schaefer.
- Psych. 110. Educational Psychology (3). First and second semesters. Schaefer.
- Psych. 121. Social Psychology (3). First and second semesters.

- Psych. 122. Advanced Social Psychology (3). Second semester.
- Psych. 125. Child Psychology (3). First semester. Schaefer.
- Psych. 126. Developmental Psychology (3). Second semester. Schaefer.
- Psych. 127. Psychology of Early Man (3). Second semester. Sprowls.
- Psych. 128. Human Motivation (3). First semester. Cofer.
- Psych. 131. Abnormal Psychology (3). Second semester. Sprowls.
- Psych. 136. Applied Experimental Psychology (3). Second semester. Walker.
- Psych. 140. Psychological Problems in Advertising (3). First semester.
- Psych. 142. Techniques of Interrogation (3). Second semester. Hackman.
- Psych. 145. Introduction to Experimental Psychology (3). First and second semesters. Laboratory fee, \$4.00. Walker.
- Psych. 150. Tests and Measurements (3). First semester. Laboratory fee, \$4.00. Smith.
- Psych. 155. Psychological Techniques in Vocational Counseling (3). Second semester. Smith.
- Psych. 161. Psychological Techniques in Personnel Administration (3). Second semester. Schaefer.
- Psych. 167. Psychological Problems in Aviation (3). Second semester. Walker.
- Psych. 191, 192. General Experimental Psychology (3, 3). First and second semesters. Hackman.
- Psych. 194. Independent Study in Psychology (3). First and second semesters. Staff.
- Psych. 195. Minor Problems in Psychotechnology (3). First and second semesters. Staff.
- Psych. 198. Proseminar: Current Research in Psychotechnology (3). Second semester. Staff.

## FOR GRADUATES

- Psych. 203, 204. Seminar: Review of Current Technological Researches (3, 3). First and second semesters. Staff.
- Psych. 205, 206. Historical Viewpoints and Current Theories in Psychology (3, 3). First and second semesters. Hackman, Cofer.
- Psych. 210. Occupational Information (3). Second semester. Prerequisite, Psych. 150.

- Psych. 211. Job Analysis and Description (3). First semester. Prerequisite, Psych. 210.
- Psych. 220, 221. Counseling Techniques (3, 3). First and second semesters. Prerequisite, Psych. 210. Smith.
- Psych. 222. Rehabilitation Techniques (3). Second semester. Prerequisite, Psych. 220.
- Psych. 223. Diagnosis and Correction of Reading Difficulties (3). First semester. Prerequisite, Psych. 221.
- Psych. 224. Counseling for Marital Problems (3). Second semester. Prerequisite, Psych. 221.
- Psych. 225. Participation in Counseling Clinic (3). First semester. Prerequisite, Psych. 221. Smith.
- Psych. 230. Determinants of Human Efficiency (3). First semester. Prerequisite, Psych. 128. Walker.
- Psych. 231. Training Procedures in Industry (3). First semester. Prerequisite, Psych. 230.
- Psych. 233. Social Organization in Industry (3). First semester. Prerequisite, Psych. 230.
- Psych. 241. Controlled Publicity (3). First semester. Prerequisite, consent of instructor. Hackman.
- Psych. 242. Measurement of Group Reaction (3). Second semester. Prerequisite, Psych. 241. Hackman.
- Psych. 250, 251. Development and Validation of Predictors (3, 3). First and second semesters. Prerequisite, Psych. 150. Schaefer.
- Psych. 252, 253. Advanced Statistics (3, 3). First and second semesters. Prerequisite, Psych. 106. Hackman.
- Psych. 260, 261. Individual Tests (3, 3). First and second semesters. Laboratory fee, \$4.00. Prerequisite, Psych. 150. Cofer.
- Psych. 263. Appraisal of Interests (3). Second semester. Prerequisite, Psych. 262. Schaefer.
- Psych. 264, 265. Projective Tests (3, 3). First and second semesters. Laboratory fee, \$4.00. Prerequisite, Psych. 261. Cofer.
- Psych. 266, 267. Theories of Personality and Motivation (3, 3). First and second semesters. Cofer.
- Psych. 270. Advanced Abnormal Psychology (3). First semester. Prerequisite, Psych. 131. Sprowls.
- Psych. 271. Special Testing of Disabilities (3). Second semester. Prerequisite, Psych. 270.

- Psych. 272, 273. Individual Clinical Diagnosis (3, 3).** First and second semesters. Prerequisite, Psych. 261. Cofer.
- Psych. 274. Individual Therapy (3).** First semester. Prerequisite, Psych. 261.
- Psych. 275. Group Therapy (3).** Second semester. Prerequisite, Psych. 274.
- Psych. 278. Seminar in Clinical Psychology for Teachers (3).** First semester. Prerequisite, consent of instructor. Sprowls.
- Psych. 280. Physiological Psychology (3).** First semester. Prerequisite, consent of instructor. Walker.
- Psych. 290, 291. Research for Thesis (3, 3).** First and second semesters. Staff.

### SOCIOLOGY

#### FOR GRADUATES AND ADVANCED UNDERGRADUATES

- Soc. 113. The Rural Community (3).** Second semester. Prerequisite, Soc. 1, or its equivalent. Hoffsommer.
- Soc. 114. The City (3).** First semester. Prerequisite, Soc. 1, or its equivalent. Houser.
- Soc. 115. Industrial Sociology (3).** Second semester. Prerequisite, Soc. 1, or its equivalent. Imse.
- Soc. 118. Community Organization (3).** Second semester. Prerequisite, Soc. 1, or its equivalent. Bailey.
- Soc. 121, 122. Population (3, 3).** Three hours a week, first and second semesters. Prerequisite, Soc. 1, or its equivalent. Baker.
- Soc. 123. Ethnic Minorities (3).** First semester. Prerequisite, Soc. 1, or its equivalent. Ebersole.
- Soc. 124. The Culture of the American Indian (3).** Second semester. Prerequisite, Soc. 1, or its equivalent. Hutchinson.
- Soc. 131. Introduction to Social Service (3).** First semester. Prerequisite, Soc. 1, or its equivalent. L. Houser.
- Soc. 141. Sociology of Personality (3).** First semester. Prerequisite, Soc. 1, or its equivalent. Ebersole.
- Soc. 144. Collective Behavior (3).** Second semester. Prerequisite, Soc. 1, or its equivalent. Ebersole.
- Soc. 145. Social Control (3).** First semester. Prerequisite, Soc. 1, or its equivalent. Ebersole.
- Soc. 147. Sociology of Law (3).** First semester. Prerequisite, Soc. 1, or its equivalent. Lejins.

- Soc. 153. Juvenile Delinquency (3). First semester. Prerequisite, Soc. 1, or its equivalent. Lejins.
- Soc. 154. Crime and Delinquency Prevention (3). Second semester. Prerequisites, Soc. 1, or its equivalent; Soc. 52, Soc. 153, or consent of instructor. Lejins.
- Soc. 156. Institutional Treatment of Criminals and Delinquents (3). Second semester. Prerequisites, Soc. 1, or its equivalent; Soc. 52, Soc. 153, or consent of instructor. Lejins.
- Soc. 171. Family and Child Welfare (3). First semester. Prerequisite, Soc. 1, or its equivalent. Shankweiler.
- Soc. 173. Social Security (3). First semester. Prerequisite, Soc. 1, or its equivalent. Hutchinson.
- Soc. 174. Public Welfare (3). Second semester. Prerequisite, Soc. 1, or its equivalent. L. Houser.
- Soc. 183. Social Statistics (3). Second semester. Prerequisite, Soc. 1, or its equivalent. Imse.
- Soc. 186. Sociological Theory (3). Second semester. Prerequisite, Soc. 1, or its equivalent. Bailey.
- Soc. 196. Senior Seminar (3). Second semester. Prerequisite, senior standing with major in Sociology. Hoffsommer.

## FOR GRADUATES

- Soc. 201. Methods of Social Research (3). First semester. Hoffsommer.
- Soc. 215. Community Studies (3). First semester. Hoffsommer.
- Soc. 221. Population and Society (3). Second semester. Staff.
- Soc. 224. Race and Culture (3). Second semester. Staff.
- Soc. 241. Personality and Social Structure (3). Second semester. Staff.
- Soc. 246. Public Opinion and Propaganda (3). Second semester. Staff.
- Soc. 253. Advanced Criminology (3). First semester. Lejins.
- Soc. 255. Seminar: Juvenile Delinquency (3). First semester. Lejins.
- Soc. 257. Social Change and Social Policy (3). First semester. Staff.
- Soc. 262. Family Studies (3). Second semester. Shankweiler.
- Soc. 282. Sociological Methodology (3). Second semester. Staff.
- Soc. 285. Seminar: Sociological Theory (3). First semester. Bailey.
- Soc. 290. Research in Sociology. Credit to be determined. Staff.
- Soc. 291. Special Social Problems. First and second semesters. Credit to be determined. Staff.



## SPEECH AND DRAMATIC ART

## FOR GRADUATES AND ADVANCED UNDERGRADUATES

- Speech 101. Radio Speech (3). First semester. Prerequisite, Speech 4, Laboratory fee, \$2.00. Batka.
- Speech 102. Radio Production (3). Second semester. Consent of instructor. Laboratory fee, \$2.00. Batka.
- Speech 103, 104. Speech Composition and Rhetoric (3, 3). First and second semesters. Golden.
- Speech 105. Pathology (3). First semester. Ansberry.
- Speech 106. Clinic (3). Second semester. Prerequisite, Speech 105. Ansberry.
- Speech 107. Advanced Oral Interpretation (3). Second semester. Prerequisite, Speech 13. Provenson.
- Speech 110. Teacher Problems in Speech (3). Second semester. For students who intend to teach. Hendricks.
- Speech 111. Seminar (3). Second semester. Ehrensberger.
- Speech 112. Phonetics (3). Second semester. Ansberry.
- Speech 113. Play Production (3). Second semester. Harris.
- Speech 114. Costuming (3). First semester. One lecture and two laboratories a week.
- Speech 115. Radio in Retailing (3). First semester. Prerequisites, Speech 1, 2; English 1, 2. Laboratory fee, \$2.00. Batka.
- Speech 116. Radio Announcing (3). Second semester. Prerequisite, Speech 101. Laboratory fee, \$2.00. Batka.
- Speech 117. Radio Continuity Writing (3). First semester. A study of the principles and methods of writing for broadcasting. Application will be made in the writing of the general types of continuity. Admission by consent of instructor. Coppinger.
- Speech 118. Advanced Radio Writing (3). Second semester. Prerequisite, Speech 117. Advanced work with emphasis upon the dramatic form. Admission by consent of instructor. Coppinger.
- Speech 119. Radio Acting (3). Second semester. A workshop course designed to give the student practice in radio acting. Admission by consent of the instructor. Batka.
- Speech 120. Advanced Speech Pathology (3). Second semester. Prerequisite, Speech 105. A continuation of Speech 105. Ansberry.
- Speech 121. Stage Design (3). Second semester. Prerequisites, Speech 14, 15. The planning of stage settings and the application of the principles of design to the dramatic production. Admission by consent of the instructor. Harris.

- Speech 122, 123. Radio Workshop (3, 3).** First and second semesters. A laboratory course dealing with all phases of producing a radio program. Admission by consent of instructor. Laboratory fee, \$2.00. Batka.
- Speech 124, 125. American Public Address (3, 3).** First and second semesters. The first semester covers the period from Colonial times to the Civil War period. The second semester covers from the Civil War period through the contemporary period. Golden.
- Speech 126. Semantic Aspects of Speech Behavior (3).** First semester. An analysis of speech and language habits from the standpoint of General Semantics. Hendricks.
- Speech 129, 130. Play Directing (2, 2).** A lecture-laboratory course dealing with the fundamentals of script cutting, pacing, movement, blocking and rehearsal routine as applied to the directing of plays. Mayer.

## FOR GRADUATES

The Department maintains a reciprocal agreement with Walter Reed General Hospital whereby clinical practice may be obtained at the Army Audiology and Speech Correction Center, Forest Glen, Maryland.

- Speech 200. Thesis (3-6).** Credit in proportion to work done and results accomplished. Staff.
- Speech 201. Special Problems (2-4).** Arranged. Staff.
- Speech 210. Anatomy and Physiology of Speech and Hearing (3).** A study of the anatomy and physiology of the auditory and speech mechanisms. Glorig.
- Speech 211. Advanced Clinical Practice (3).** A comprehensive survey of the entire field of present-day clinical practice. Glorig.
- Speech 212. Advanced Speech Pathology (3).** Etiology and therapy for organic and functional speech disorders. Ansberry.
- Speech 213. Speech Problems of the Hard of Hearing (3).** Correction of abnormal speech habits and instruction in speech conservation. Baltzer.
- Speech 214. Clinical Audiometry (3).** Testing of auditory acuity with pure tones and speech. Sonday.
- Speech 215. Auditory Training (3).** Orientation and adjustment of patients in the use of hearing aids. Staff.
- Speech 216. Speech Reading (3).** A course of training designed to present the fundamentals of speech reading. Baughman.
- Speech 217. Clinical Practice in the Selection of Prosthetic Appliances (3).** A laboratory course in modern methods of utilizing electronic hearing aids. Staff.

- Speech 218. Problems of Hearing and Deafness (3).** The adjustment of the individual with a hearing impairment socially, emotionally and vocationally. Staff.

### VETERINARY SCIENCE

#### FOR GRADUATES AND ADVANCED UNDERGRADUATES

- V. S. 101. Comparative Anatomy (3).** Two lectures and one laboratory period a week, first semester Coffin.
- V. S. 102. Animal Hygiene (3).** Two lectures and one laboratory period a week, second semester. Coffin.
- V. S. 103. Regional Comparative Anatomy (3).** One lecture and one laboratory period a week, first semester. Coffin.
- V. S. 108. Avian Anatomy (3).** Two lectures and one laboratory period a week, first semester. DeVolt.
- V. S. 107. Poultry Hygiene (3).** Two lectures and one laboratory period a week, second semester. DeVolt.

#### FOR GRADUATES

- V. S. Animal Disease Problems (2-6).** Arranged. Staff.
- V. S. 202. Animal Disease Research (2-6).** Arranged. Staff.
- V. S. 203. Electron Microscopy (2).** One lecture and one laboratory period a week. Arranged. Staff.

### ZOOLOGY

#### FOR GRADUATES AND ADVANCED UNDERGRADUATES

Laboratory fees in Zoology are \$6.00 per semester.

- Zool. 101. Mammalian Anatomy (3).** Three laboratory periods a week, second semester. Prerequisite, permission of instructor. Stringer,
- Zool. 102. General Animal Physiology (4).** Two lectures and two laboratory periods a week, second semester. Prerequisites, one year of Chemistry, one course in Zoology. Phillips.
- Zool. 104. Genetics (3).** First semester. Three lecture periods a week. Prerequisite, one course in Zoology or Botany. Burhoe.
- Zool. 108. Animal Histology (4).** Two lecture and two laboratory periods a week, first semester. Prerequisite, one year of Zoology. Stringer.
- Zool. 110. Parasitology (4).** First semester. Two lectures and two laboratory periods a week. Prerequisite, one year of Zoology. Negherbon.
- Zool. 116. Protozoology (4).** Second semester. Two lectures and two laboratory periods a week. Prerequisites, Histology; Bacteriology desirable. Negherbon.

- Zool. 121. Principles of Animal Ecology (3).** Two lectures and one laboratory period a week, second semester. Prerequisites, one course in Zoology and one course in Chemistry. Littleford.
- Zool. 125. Fisheries Biology (3).** Two lectures and one laboratory period a week, first semester. Prerequisites, Zool. 5, 102. Littleford.
- Zool. 130. Aviation Physiology (3).** Three lectures a week, second semester. Prerequisite, permission of the instructor. Reynolds.

## FOR GRADUATES

- Zool. 200. Ichthyology and Marine Zoology (4).** Two lectures and one laboratory period a week, first semester. Littleford.
- Zool. 201. Microscopical Anatomy (4).** Two lectures and two laboratory periods a week, second semester.
- Zool. 202. Animal Cytology (4).** Two lecture and two laboratory periods a week, first semester. Negherbon.
- Zool. 203. Advanced Embryology (4).** Two lectures and two laboratory periods a week, second semester. Burhoe.
- Zool. 204. Advanced Animal Physiology (4).** Two lectures and two laboratory periods a week, first semester. Phillips.
- Zool. 205. Hydrobiology (4).** Two lectures and two laboratory periods a week, second semester. Littleford.
- Zool. 206. Research.** Credit to be arranged. First and second semesters. Staff.
- Zool. 207. Zoology Seminar (1).** First and second semesters. One lecture a week. Staff.
- Zool. 208. Special Problems in General Physiology.** Hours and credits arranged. Second semester. Phillips.
- Zool. 220. Advanced Genetics (3).** Two lectures and one laboratory period a week, second semester. Prerequisite, Zool. 104. Burhoe.

## SCHOOL OF DENTISTRY

## DEPARTMENT OF ANATOMY

## MINORS

- Anatomy 111. Human Gross Anatomy (8).** Two lectures and two laboratory periods per week throughout the dental school academic year. Hahn, Thompson, and Pollack.
- Anatomy 113. Human Neuroanatomy (4).** Three lectures and two laboratory periods for approximately eight week. Hahn, Thompson, and Pollack.

## MAJORS

- Anatomy 211. Human Gross Anatomy.** Credits to be arranged. Same as course 111 but with additional instruction. Hahn, Thompson.
- Anatomy 213. Human Neuroanatomy.** Credits to be arranged. Same as course 113 but with additional instruction. Hahn, Thompson.
- Anatomy 216. Research.** Time and credit by arrangement. Staff.

## DEPARTMENT OF BIOCHEMISTRY

## MINORS

- Biochemistry 111. Principles of Biochemistry (6).** Two lectures, one conference and one laboratory period per week throughout the dental school academic year. Vanden Bosche.

## MAJORS

- Biochemistry 211. Advanced Biochemistry.** Time and credits by arrangement. Vanden Bosche.
- Biochemistry 212. Research in Biochemistry.** Time and credits by arrangement. Prerequisite, 211. Vanden Bosche.

## DEPARTMENT OF HISTOLOGY AND EMBRYOLOGY

## MINORS

- Histology 112. Mammalian Histology and Embryology (6).** Two lectures and two laboratory periods per week throughout the dental school academic year. McCrea.

## MAJORS

- Histology 212. Mammalian Histology and Embryology.** Number of credits by arrangement. Same as course 112 but with additional work and instruction of a more advanced nature. McCrea.
- Research in Histology 214.** Number of hours and credit by arrangement. Prerequisite, 112 or 212. McCrea.
- Research in Embryology 215.** Number of hours and credit by arrangement. Prerequisites by arrangement. McCrea.

## SCHOOL OF MEDICINE

## GROSS ANATOMY

## MINORS

- Anat. 101. Human Gross Anatomy (10).** Total number of hours, approximately 350. Six conferences and lectures, eighteen laboratory hours per week throughout the first semester of every medical school year. Uhlenhuth, Figge, Krah1 and Smith.

## MAJORS

- Anat. 201. Human Gross Anatomy.** Number of credits by arrangement. Same course as Anat. 101, but with additional work of a more advanced nature. Uhlenhuth, Figge, Krah1 and Smith.
- Anat. 202. Advanced Anatomy.** Number of hours and credits by arrangement. Prerequisite, Anat. 101 or 201. Uhlenhuth and Staff.
- Anat. 203. Research in Gross Anatomy.** Number of hours and credits by arrangement. Prerequisite, Anat. 202. Uhlenhuth and Staff.
- Anat. 204. Problems in Physiological Anatomy.** Number of hours and credits by arrangement. Prerequisites, Anat. 201, 202, and either Anat. 207 or 208. Uhlenhuth and Staff.

## BACTERIOLOGY

## MINORS

- Bact. 101. General Bacteriology (5).** Sixteen hours and 104 laboratory hours. Drs. Hachtel, McAlpine, and Levin.
- Bact. 102. Immunology (4).** Sixteen lectures and 56 laboratory hours. Drs. Hachtel, McAlpine, and Levin.

## MAJORS

- Bact. 201. Special Problems.** Time and credit by arrangement.
- Bact. 202. Research.** Time and credit by arrangement.

## BIOCHEMISTRY

## MINORS

- Biochem. 101. Principles of Biochemistry (8).** Seven lectures and conferences and two three-hour laboratory periods a week for sixteen weeks. Prerequisites, inorganic, organic, and quantitative or physical chemistry. Schmidt and Staff.

## MAJORS

- Biochem. 201.** Prerequisite, Biochem. 101. Credit proportioned to extent and quality of work accomplished. Schmidt and Weiland.
- Biochem. 202. Research.** Credit proportioned to extent and quality of work accomplished. Schmidt and Weiland.

## HISTOLOGY, EMBRYOLOGY AND NEURO-ANATOMY

## MINORS

- Hist. 101. Mammalian Histology (6).** Two lectures, ten laboratory hours per week, throughout the first semester of every medical school year. Lutz, Harne.

- Hist. 102. Human Neurology (4).** Three lectures and six laboratory hours per week for ten weeks of the second semester of every medical school year. Prerequisite, Hist. 101, or equivalent. Lutz, Harne.

## MAJORS

- Hist. 201. Mammalian Histology.** Number of credits by arrangement. Same course as Hist. 101, but with additional work of a more advanced nature. Harne.
- Hist. 202. Human Neurology.** Number of credits by arrangement. Same course as Hist. 102, but with additional work of a more advanced nature. Prerequisite, Hist. 101 or 201.
- Hist. 203. Research in Embryology, Histology or Neuro-Anatomy.** Credit by arrangement. Open to students majoring in Prerequisites, Anat. 201; Hist. 201, 202. Harne.

## PHARMACOLOGY

All students majoring in pharmacology with a view to obtaining the degree of Master of Science or Doctor of Philosophy should secure special training in anatomy, mammalian physiology, organic chemistry, and physical chemistry.

## MINORS

- Pharmacology 101, f.s. General Pharmacology (8).** Three lectures and one laboratory. This course consists of 90 lectures and 30 laboratory periods of three hours each, offered each year. Krantz, Carr, Iwamoto, Musser, Harne.

## MAJORS

- Pharmacology 202, f.s. General Pharmacology.** Same as 101 for students majoring in pharmacology. Additional instruction and collateral reading are required. Krantz, Carr, Iwamoto, Musser, Harne.
- Pharmacology 203. Chemotherapy.** Credit in accordance with the amount of work accomplished. Krantz.
- Pharmacology 204. Carbohydrate Metabolism.** Credit in accordance with the amount of work accomplished. Krantz, Carr.
- Pharmacology 205. Research.** Credit in accordance with the amount of work accomplished. Krantz, Carr.
- Pharmacology 206. Special Problems in Toxicology.** Credit in accordance with the amount of work accomplished. Carr.
- Pharmacology 207. Anesthesia.** Credit in accordance with the work accomplished. Krantz, Carr.

## PHYSIOLOGY

## FOR GRADUATES AND ADVANCED UNDERGRADUATES

- Physiology 101. Neurophysiology (3).** Two lectures a week, for fifteen weeks; ten three-hour laboratory periods; second semester. This course covers the physiology of muscle, peripheral nerve, central nervous system and sense organs. Amberson and Staff.
- Physiology 102. The Principles of Physiology (7).** Four lectures, one conference a week, for fifteen weeks; twenty-five four-hour laboratory periods; first semester. This course covers the physiology of circulation, respiration, digestion, the endocrines (including reproduction) and the kidney. Amberson and Staff.

## FOR GRADUATES

- Physiology 201. Experimental Mammalian Physiology.** Time and credit by arrangement. Amberson and Smith.
- Physiology 202. Blood and Tissue Proteins (2).** One lecture a week, for thirty weeks. Amberson.
- Physiology 203. Physiology of Reproduction (2).** Two hours a week, lectures, conferences and seminars, for twenty weeks. Smith.
- Physiology 204. Electrophysiology (1).** One lecture a week, for fifteen weeks. Oster.
- Physiology 205. Seminar.** Credit according to work done. Amberson and Staff.
- Physiology 206. Research.** By arrangement with the head of the department. Staff.

## SCHOOL OF PHARMACY

## BACTERIOLOGY

## FOR GRADUATES AND ADVANCED UNDERGRADUATES

- Bact. 115. Serology and Immunology (3).** Three lectures and three laboratory periods a week, first semester. Shay.

## FOR GRADUATES

- Bact. 200, 201. Chemotherapy (1, 1).** One lecture a week, first and second semesters. Offered in alternate years. Shay.
- Bact. 210. Special Problems in Bacteriology.** Laboratory course. Credit determined by amount and quality of work. Shay.
- Bact. 211. Public Health (2).** One lecture. Shay.
- Bact. 221. Research.** Credit determined by amount and quality of work. Shay.



**BOTANY AND PHARMACOGNOSY****FOR GRADUATES AND ADVANCED UNDERGRADUATES**

- Bot. 101, 102. Taxonomy of the Higher Plants (2-4).** One lecture and one laboratory period a week. Given in alternate years. Slama.
- Bot. 111, 113. Plant Anatomy (2-4).** Two lectures a week. Slama.
- Bot. 112, 114. Plant Anatomy (2-4).** Two laboratory periods a week. Prerequisites, Bot. 111, 113. Slama.

**FOR GRADUATES**

- Pharmacognosy 201, 202. Advanced Study of Vegetable Powders (4-8).** Two lectures and two laboratory periods a week. Prerequisites, Bot. 111, 113, 112, 114. Slama.
- Pharmacognosy 211, 212. Advanced Pharmacognosy (4-8).** Two lectures and two laboratory periods a week. Prerequisites, Bot. 111, 113, 112, 114. Slama.
- Pharmacognosy 220. Research.** Credit according to amount and quality of work performed. Slama.

**PHARMACEUTICAL CHEMISTRY****FOR GRADUATES AND ADVANCED UNDERGRADUATES**

- Pharm. Chem. 111, 113. Chemistry of Medicinal Products (2, 2).** Three lectures a week, first and second semesters. Prerequisites, Chem. 35, 37, 53. Hager.
- Pharm. Chem. 112, 114.—Chemistry of Medicinal Products (2, 2).** Two laboratory periods a week, either or both semesters. Prerequisites, Pharm. Chem. 111, 113, or may be taken simultaneously with Pharm. Chem. 111, 113. Hager.
- Chem. 142, 144. Advanced Organic Laboratory (2, 2).** Two laboratory periods a week, any one or both semesters. Prerequisites, Chem. 19 or 23, and Chem. 37, 38. Staff.
- Chem. 146, 148. Identification of Organic Compounds (2, 2).** One lecture and two laboratory periods a week, any one or both semesters. Prerequisites, Pharm. Chem. 111, 113, or Chem. 141, 143. Staff.
- Chem. 151, 153. Physiological Chemistry (2, 2).** Two lectures a week, first and second semesters. Prerequisites, Chem. 35, 37 and Physiology 22. Chapman.
- Chem. 152, 154. Physiological Chemistry (2, 2).** Two laboratory periods a week, first and second semesters. Prerequisites, Chem. 35, 37, 151, 153, or may be taken simultaneously with Chem. 151, 153. Chapman.

## FOR GRADUATES

- Pharm. Chem. 201, 203. Survey of Pharmaceutical Chemistry (2, 2). Two lectures a week, first and second semesters. Prerequisites, Pharm. Chem. 111, 113. Hager.
- Pharm. Chem. 211, 213. Chemistry of the Alkaloids (2, 2). Two lectures a week, first and second semesters. Prerequisites, Pharm. Chem. 111, 113. Hager.
- Pharm. Chem. 220. Advanced Pharmaceutical Syntheses (2-6). Laboratory and conferences, either or both semesters. Prerequisites, Chem. 142, 144. Hager.
- Pharm. Chem. 222. Advanced Pharmaceutical Analyses (1-4). Laboratory and conferences, either or both semesters. Prerequisites, Chem. 146, 148. Hager.
- Pharm. Chem. 230. Pharmaceutical Chemistry Seminar (1). Required of students majoring in pharmaceutical chemistry. Hager.
- Pharm. Chem. 235. Research. Credit determined by amount and quality of work performed. Hager and Staff.
- Chem. 258. The Identification of Organic Compounds. An advanced course. Two to four laboratory periods a week, either semester. Prerequisites, Chem. 146, 148, or equivalent. Staff.

## PHARMACOLOGY

## FOR GRADUATES AND ADVANCED UNDERGRADUATES

- Pharmacology 111. Official Methods of Biological Assay (4). Two lectures and two laboratory periods a week, first semester. Prerequisite, Pharmacology 51, 52. Chapman.

## FOR GRADUATES

- Pharmacology 201, 202. Methods of Biological Assay (8). Two lectures and two laboratory periods a week, first and second semesters. Prerequisite, Pharmacology 111. Offered in alternate years. Chapman.
- Pharmacology 211, 212. Special Studies in Pharmacodynamics (8). Two lectures and two laboratory periods a week, first and second semesters. Prerequisites, Pharmacology 51 and 52 and the approval of the instructor. Chapman.
- Pharmacology 221, 222. Special Studies in Biological Assay Methods (4-8). Credit according to amount of work undertaken after consultation with the instructor. Laboratory work and conferences, first and second semesters. Prerequisites, Pharmacology 111, 201, 202. Offered in alternate years. Chapman.
- Pharmacology 250. Research Pharmacology. Properly qualified students may arrange semester hours' credit with the instructor. Chapman.

## PHARMACY

## FOR GRADUATES AND ADVANCED UNDERGRADUATES

- Pharmacy 101, 102. (3, 3.)** Two lectures and one laboratory a week.  
Prerequisite, consent of the instructor. Allen, Balassone.
- Pharmacy 111, 112. Advanced Prescription Compounding (3, 3).** Two laboratory periods a week. Allen, Meyers.
- Pharmacy 120. Hospital Management (2).** Two lectures a week. Purdum.

## FOR GRADUATES

- Pharmacy 201, 202. Advanced Pharmaceutical Technology (4, 4).** Two lectures and two laboratory periods a week. Purdum, Allen.
- Pharmacy 211, 212. Survey of Pharmaceutical Literature (1, 1).** One lecture a week. Purdum.
- Pharmacy 221, 222. History of Pharmacy (2, 2).** Two lectures a week.  
Given in alternate years. Purdum.
- Pharmacy 235. Research in Pharmacy.** Credit and hours to be arranged.  
Purdum.

## PHYSICS AND PHYSICAL CHEMISTRY

- Chem. 187, 189. Physical Chemistry (3, 3).** Three lectures a week, first and second semesters. Prerequisites, Phys. 10, 11; Chem. 15, 35, 37.  
Estabrook.
- Chem. 188, 190. Physical Chemistry (2, 2).** Two laboratory periods a week, first and second semesters. Prerequisite, Chem. 187, 189, or may be taken simultaneously with these courses. Estabrook.
- Phys. 121, 122. Electricity and Magnetism (3, 3).** Two lectures and one laboratory period a week, first and second semesters. Given in alternate years. Prerequisites, Phys. 10, 11; Math. 20, 21. Estabrook.
- Phys. 208. Thermodynamics (2, 2).** Two lectures a week, first and second semesters. Prerequisites, Phys. Chem. 187, 189, 188, 190. Given in alternate years. Estabrook.



Campus Scene, College Park

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4. College of Education
5. College of Engineering
6. College of Home Economics
7. College of Military Science, Physical Education and Recreation.
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9. Summer School
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